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ORIGINAL COMMUNICATIONS.

(Original communications are received with the understanding
that they are contributed exclusively to THE LARYNGOSCOPE.)

THE NOSE AND THROAT IN THE HISTORY OF MEDICINE.

BY JONATHAN WRIGHT, M.D., BROOKLYN, N. Y.

(Continued from page 469.)

THE RESULTS OF THE RENAISSANCE.

It is unnecessary to enter further than we have already done, into an account of the collateral events in the development of our knowledge of the nose and throat. The facts brought to light were numerous. Scarcely less abundant were the theories to account for them. Through this maze of truth and error we must try to trace the thread of our own story. To take this up we must return to the period succeeding the revival of anatomical learning, in order to see the effect it had on the ideas concerning the nose and throat and their treatment. It is of only incidental interest to remark here that the first separate treatise of laryngeal disease I have met with, is that of Codronicus' "De Vitiis Vocis," published in 1597. It contains nothing of value, being a faulty copy of Galen's ideas. It is, however, significant of the tremendous amount of pulpit oratory which was going on then, often perhaps under circumstances very trying to the organ of the voice, to find the author on the first of his 147 pages declaring that he writes the book for the good of the preachers of the Holy Word. This I believe is not now to be found in the prefaces of text-books on the larynx. Very little perusal of it will reveal evidence that the clergyman's sore throat was then well known.

A little before this, in 1591, Forestus, a very voluminous but a perspicuous writer, devoted, in his works,* 300 12mo. pages of fine print to the diseases of the nose and throat. In regard to Anosmia he says:

* *Observationum et Curationum Medicinalium Libri.*

Sixteenth
Century
Practice.

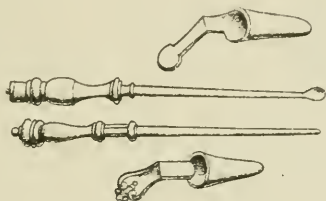
"If it is from ethmoidal obstruction, or from the humour discharged from a catarrh, the latter must first be cured. (By ethmoidal obstruction he does not here mean the stoppage of the holes in the cribriform plate). If from flesh growing within the nose, or from a wart or a hemorrhoid, it is to be cured by the surgeons by operative procedures, either with a cutting instrument or cautery or snare." All of which is good treatment, but then follow therapeutic measures based on prae-Schneiderian anatomy: "If from an abundance of humours filling the ventricles of the brain or obstructing the sieve-like openings, it is to be carried off by the letting of blood, or by purging." The cautery is often mentioned with recommendations not only for its intra-nasal use, but as a remedy in nasal disease to be applied to the cranial bregmata and the posterior cervical regions, a method of treatment we have noted in Herodotus as existing among the Libyans, for the prevention and cure of coryza and catarrh. Indeed his therapy seems a queer mixture, some of it taken from hoary antiquity, while some of it bears favorable comparison with modern treatment. He claims to have cured a girl of ozæna by copious nasal douching "with perfumed white wine in which were dissolved cypress, roses and myrrh." He also used nitrate of silver and alum rubbed up with honey and applied with a probe. We are a little shocked to find, further on, that he cured another by bleeding, purging, cupping, diet for six weeks and administering a decoction of guaiac. Forestus dwells on the ravages of nasal syphilis, which prefers attacking the bone to the soft parts, and he reminds us that not every ulcer in the nose is ozæna, for often ulcers arise from a salty mucus which produces crusts, and these are easily cured. We find this crude pathology at a much later date. Boerhaave declared (1668-1738): "This mucus, being also corrupted, produces an ulcer which corrodes the adjacent bones." Of course ozæna, after the advent of syphilis, was frequently confounded with it.

Dry Heat in
the Therapy
of Ozæna.

We may note here the method of treating ozæna detailed by Fabricius ab Acquapendente* who wrote about the same time as Forestus, but whose works are of much more importance in the history of medicine. After criticising the treatment of Celsus, he says: "Wherefore I offer you a similar surgical procedure in ozæna, but a far milder one. An iron canula is to be inserted in the nostril, so long that it will reach the end and equal the length of the ulceration and occupy the cavity of the nostrils; through this a glowing hot instrument is to be introduced, which, however, should

* Opera Chirurgica: "De Chirurgicis Operationibus," Cap. XXVI; edit. 1723.

not reach beyond the canula; it should be so done that the hot iron heats the tube, and through this the nasal tissues and the ozæna; it is not intended that the nose should suffer pain from this heat, but only that the ulcerated part should be heated to a point short of pain (*citra dolorem*), in one having a good tolerance. This being perceived the canula may be taken out of the nostrils, the secretions cleaned off and then replaced." This was to be repeated as often as necessary until the part was thoroughly cleansed of crusts, the mucous membrane made red without the pain of burning, the secretions stimulated, and thus the ulcer healed. Dionis much later (1707) followed practically the same method, and I am sure every modern rhinologist will appreciate the value of the suggestion Dionis used a canula closed at one end.



The Nasal Cauteries of Dionis.

Forestus† referring to the tonsils, under the heading of inflammation of the glands, as small caruncles which all men have at the back of the mouth on each side. His method of treating hypertrophies in this situation in a young girl of eighteen was atrocious. She was nearly suffocated with large tonsils, and had never menstruated. He administered the extract of swallow's nest (one could make a homœopathic pun on it in English but not in Latin), and gave her urine to drink. Bleeding and cupping were vigorously used and after five days "in spite of the treatment she fell into a deliquium animi" which he ascribed to "uterine suffocation." He then quotes Aetius as saying on the authority of Archigines: "Many virgins at the age of puberty, lacking their menses, are seized with this affection." This differs from modern ideas, whose interpretation would be "Many virgins, at the age of puberty, lack their menses, because they are seized with this affection." Elsewhere he dilates on the virtues of the stercoraceous drugs in affections of the tonsils. Further on we shall have to refer to the first account of an epidemic of Diphtheria by Forestus, but in his chap-

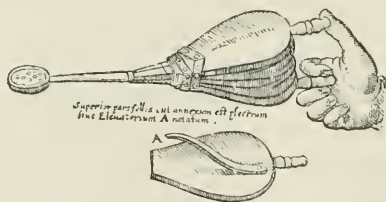
Tonsillar Hy-
pertrophy.

† L. c. Lib. 15, obs. VII.

ters on the nose and throat we find plentiful evidence of sporadic cases, undifferentiated from other throat inflammations, and we read* a graphic description of the death of his own father from laryngeal stenosis, without apparently the thought of a tracheotomy, though he was perfectly familiar with the description of it by Paulus. Cynache, Paracynche, and cynache with phlegmonous facial erysipelas, are terms which still remind us that the frequency of that type of disease must have then, as in the time of Hippocrates, been greater than now, perhaps from personal uncleanness and the greater exposure thereby to septic influences.

Fabricius ab Acquapendente, after describing the operation of tonsillotomy as performed by Celsus and Paulus Aegineta, says: "Wherefore we may gather—that it is neither entirely easy nor safe to carry out the operation." Consequently he advises "seizing the tonsil with a long, slender forceps to draw it out so that by skillfully making traction the tonsil, as if of its own accord, will follow.† There is another Fabricius, from whom much may be learned regarding the surgery of the throat at this time. Fabricius Hildanus‡ relates the case of a young man with such a hypertrophied and elongated uvula that it nearly filled the mouth and touched the teeth. It was so large, swollen and vascular, they were afraid to operate, and sent the man home to die, as they thought. On a less dangerous looking condition, in another patient, he advised operation. In a third, the growth seemed malignant, and he left it alone. For the insufflation of powders which he used in these and other cases he devised a powder blower. (Fig. P. 95, 96). The tip of the uvula was engaged

The Uvula.



The Powder Blower of Fabricius Hildanus for the Uvula.

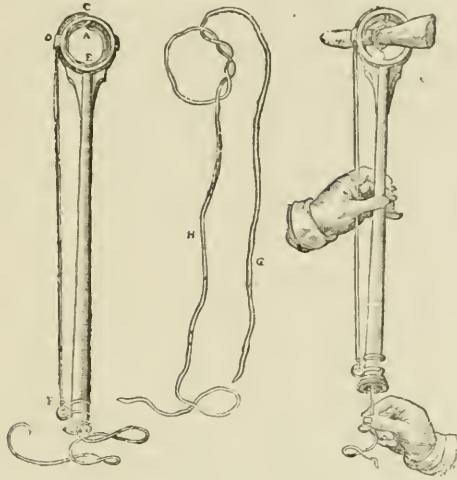
in the cup, and powder was thus thoroughly blown on it. If the relaxation and inflammation of the uvula did not yield to these measures, it was to be cut off with the scissors, or ligated, or burned with

* Lib. XV, Obs. XV—Scholia.

† L. c. Cap. XXXVIII.

‡ Observationum et Curationum Chirurgicarum Centuria II. Opera Omnia, 1646. Obs. XIX.

caustic. For tying the ligature he used an instrument which was long in vogue. (Fig. P. 97, 98). He used another instrument



The Uvulotome of Fabricius Hildanus.

for applying the actual cautery to the organ. It consisted of a long canula, fenestrated at one end. The uvula, engaged in this aperture, was burned with the hot iron thrust through the open end, the other being closed. Following Galen, though the operation was done frequently, it was always performed with a good deal of caution, as may be seen by referring to the earlier work of Paré* where instruments similar to those of Hildanus are figured. Fabricius ab Acquapendente (l. c.) boasted that his dexterity was so great, he did not have to use a forceps in cutting off the uvula, but depressing the tongue with one hand he used the scissors with the other.

The latter author† who must have written it about 1600, makes an interesting mention of tobacco in intra-nasal treatment. Sir Walter Ralieggh had brought the knowledge of the weed to England several years before, but he does not seem to have used a pipe for smoking it until after the return of Sir Francis Drake in 1586 (Lizars). Fabricius says: "They are accustomed in England to prepare a fumigation from Tobacco or *Herba Regina Exsiccata*, the smoke of which when ignited they draw through a slender pipe into the mouth, and by this the mouth being filled, so that the cheeks are inflated, it comes out of the nostrils. In England, as I have said, it is most

Tobacco
Therapy.

* *Les Oeuvres d'Ambroise Paré*. Lyon, Gregoire, 1664, p. 189.

† l. c. "*De Suffumigo Anglico ex Tabaco, et Chirurgia Naso Orique Communis*," Cap. XXVII.

frequently used, and with the happiest results." Gregory Horst* who wrote about the same time, and was enthusiastic as to the medicinal properties of tobacco in the treatment of catarrh and coryza, says: "Indeed the smoke of this ignited plant taken into the nose and mouth seems to benefit them, so that, as it were, by its resolving, cutting and attenuating properties, it causes the secretion and consumption of the mucus and viscid humors. For which reason, authors declare, the inhabitants of Florida, at certain specified seasons of the year, live on the smoke of this plant, which they receive into their mouth through horns prepared for this purpose, whereby, they assert, thirst and hunger are stilled, and an incredible amount of phlegmatic humors are collected in the mouth." So beneficial was this that some called it the "holy plant" or *Petum* or the Queen's plant. "When it is taken into the mouth through a pipe-stem, it pervades the whole brain, and in the same manner is borne into the ears and even the uterus. One of the signs of its efficacy is the paleness of the countenance." One may easily perceive traces of the experience of the first European novice to follow this curious habit, observed in the new world. The old smoker needs only to recall his first pipe to understand the awe with which the first white man looked upon the potency of the new drug. The perusal of the literature concerning the medicinal virtues of tobacco in Queen Elizabeth's time, should furnish a fruitful source for reflection to those apt to be enthusiastic over new drugs. Pursuing this line of thought, I may be allowed to insert a citation, not from the veracious history of Diedrich Knickerbocker, but from sombre, musty, medical annals. Bontekoe, a Holland sage whose singular name, "pretty cow," would attract attention without the knowledge of his other peculiarities, was so impressed with the virtues of the products his countrymen were bringing from the West and the East Indies, as to declare there was nothing so conducive to long life and robust health as smoking countless pipes of tobacco, and drinking innumerable cups of tea.

Syphilis. Whatever may be our belief as to the existence of Syphilis in the Ancient world and in the Middle Ages, none can deny that, if we are to judge alone from the medical literature of the day, apparently in the latter part of the 'fifteenth century, possibly before, certainly after the return of Columbus' sailors, Syphilis spread rapidly throughout Europe. The profligacy of the times, the wars of Italy, the indescribable misery and filth of the people, the wan-

* "Gregorii Horstii Senioris Opera Medica, Cent. Problem. Therapeut.," Decas III. Quæstio VII, p. 47, Edit. 1661.

dering priests, jongleurs, beggars, robbers have been collected by the medical historian into a picture to explain the reason for the birth of many new diseases, which appeared first during the fifteenth and sixteenth centuries, but all these pretended causes had existed for a thousand years. Columbus did not bring with him whooping cough, scarlet fever, diphtheria and influenza. These all appeared, possibly with the exception of the last, to have arisen during the Renaissance of learning in Europe. It is difficult to be sure of the origin of any of them, but we may conjecture that all had previously existed and that the awakening of scientific observation at this time first brought about the literature, upon which we depend for their identification in modern nosology.

It is only the strikingly specific phenomena of diphtheria which permit our recognizing it in the works of Aretæus and Galen. Syphilitic lesions with their multiform and deceptive resemblances, with the insignificance of the initial lesion, may easily have been classed with the various affections which are at present grouped differently. It has only been within the last hundred years that tertiary syphilitic laryngitis has been separated from tubercular, both being included by Morgagni, Louis Trousseau and Belloc, under the heading of laryngeal phthisis. There is no one word that is so comprehensive in its significance, when applied to the advance of knowledge in the history of Medicine, or indeed in the history of all science, as Differentiation, and this one word, I believe, will explain the birth of many so-called new diseases in medical annals. We can only conjecture that this holds true as to syphilis.

We have noted Berengar, reaping a rich harvest with the mercurial treatment of syphilis among the ecclesiastics in Rome, and we can scarcely peruse a medical book, published after 1500, that we do not find abundant evidences of the ravages of the disease, often unrecognized in its extragenital lesions. Sunken noses, perforated palate bones, laryngeal stenosis are forced on our attention. Forestus, who was familiar with the ravages of nasal syphilis, vividly describes the syphilitic ulcerations of the soft palate, recognizing the condition in a case he details, "though the noble youth denied it."

Various devices soon came into use for remedying the results of syphilitic ulcerations. Palfin* says that Amatus Lusitanus, a Portuguese Jew, who was born in 1511, and who succeeded in eluding the clutches of the Inquisition, invented an instrument "which is a blade of silver in the middle of which there is a hole, and through

Prostheses.

* "Anatomia Chirurgica."

this a piece of sponge may be passed and fastened firmly to the metal plate. This is then applied to the perforation of the palate in such a way that the sponge swelling with the humidity, the plate is held so firmly against the palate, and closes so exactly the opening, that it only can be detached with difficulty." Paré and Fabricius Hildannus also speak of a similar prosthesis. Paré indeed it was, who is said to have first performed the operation of staphylorrhaphy. Although he was familiar with the operation of Tagliacozzi, he suggested in cases of loss of the external nose, the use of an artificial one in the form of a mask*. Although Paré's treatment of a fractured nose was far inferior to that of Hippocrates, he figured the hollow splints he used, and elsewhere he says: "Now it is well to understand that the solution of continuity occurring in the cartilage is called fracture by Hippocrates, like those of the bone, because he had no other name to express it better."

Rhinoplasty.

In Celsus† plastic operations on the nose are very superficially noted, and the same may be said of Galen (*Isagoge*) and of Paulus Ægineta (VI, 26). The Arabians, in spite of their communication with India, and their opportunity of acquiring some of the medical knowledge of that ancient land, do not appear to have left any records of Rhinoplasty in their works. This is the more surprising, because there is every reason to believe, as Von Graefe asserts, that the Saracens introduced the art into Sicily.‡ With such a degree of skill were some of the Oriental practitioners credited, that tales were told in the Middle Ages, and even at a later date, of the executioners throwing freshly amputated noses into the fire, that they might not be picked up by friends and relations of the victim and afterwards sewed in place. Slaves, it is said, were in Sicily compelled to surrender their noses, at times, to masters who in the vicissitudes of the times had lost their own. A slight perusal of the history of Sicily will convince any one that this interchange of commodities might have been brisk, as an ordinarily active man might easily be master and slave several times, in the course of a moderately long life. There is a record of Branca§ having made a new nose as early as 1442, and he is said to have been preceded by even earlier surgeons. Branca, the father, made a nose of the neighboring

* "*Chirurgie Livre*," XXIII, Cap. 2.

† "*De Medicina*" Lib. VII, Cap. IX.

‡ For a more extensive bibliography see Cloquet: *Osphresiology*. Von Graefe: *Die Rhinoplastice*, 1818. Zeis: *Die Literatur und Geschichte der Plastischen Chirurgie*, 1863. John Hamilton: *The Restoration of a Lost Nose*, 1864.

§ For reference to an old manuscript describing the rhinoplasty of Branca, father and son, see Gurlt: *Geschichte der Chirurgie*, II s., 489.

parts of the face, but his son Antonius used the skin of the forearm. The art seems also to have been practiced in Sicily in the sixteenth century by a family of the name of Vianco.

Baas remarks "that syphilis. and a nose destroying pope, who fixed upon amputation of the nose as a punishment for larceny, afforded the most frequent occasion for these rhinoplastic operations." He refers to much later times, viz., the pontificate of Sixtus V (1585-1590). Earlier than this, Lanfranc, Chauiac, Cerlata, and other surgeons, refused to believe these marvelous stories from Sicily, but the operation is mentioned before Tagliacozzi published his work (1597), by Vesalius, Fallopius, Paracelsus and others. Benedetti, who died in 1525, is said to have been the first in Europe who speaks of artificial restoration of the nose, except those authors who ridiculed the possibility of it. I have mentioned Paré's idea of an artificial nose. Tycho Brahe, the early astronomer, a choleric philosopher, in 1566 lost his nose in a duel, and is said to have supplied the defect so skilfully with gold, silver and wax it was scarcely noticeable. Fabricius Hildanus,* in a letter to Griffonius, speaks of having seen a case in which the nasal organ had been restored by operation, after the method of Tagliacozzi, and from Griffonius' reply, we learn that he himself had learned the method from Tagliacozzi himself on one of his many journeys. This, and many other such references in the literature of the time, indicate that to the latter is due the credit of having brought the method in vogue on the continent, though his book† was not published until long after the operation was well known. His operations were elaborate and ingenious. He used not only the adjacent parts of the face in the repair of the nose, but the skin of the arm, having apparently derived the idea from his knowledge of tree grafting. His restorations of the ears and lips were not less admirable and ingenious. Such operations have always excited much merriment among the wits of the laity, and we find Butler, in his famous "Hudibras," declaring:

"So learned Taliacotius, from
The brawny part of porter's bum,
Cut supplemental noses, which
Would last as long as parent breech;
But when the date of Nock was out
Off dropped the sympathetic snout."

Van Helmont‡ gravely supplies science with the account of this

* "Opera Omnia," Edit. 1619.

† "De Curtorum Chirurgia per Insitionem, seu de Narium et Aurium Defectu per Insitionem, Arte hactenus ignota sarciendo," etc., 1597.

‡ "De Magnet. Vuln. Curat.," 22, p. 598; Ref. Daremb. (l. c.), I, 477.

tragic episode: "A citizen of Brussels, having lost his nose in a fight, applied to a surgeon, named Tagliacozzi. The latter, in order to cure him without resulting deformity, made use of autoplasty, and borrowed a strip of flesh from the arm of a servant. The wounded man returned home with his borrowed nose. Thirteen months later he was all at once disagreeably surprised to find the organ growing cold and becoming gangrenous. What had happened? After much lamentation and inquiry it was learned that the servant from whose arm the nose had been taken at Brussels had died exactly at the time the nose began to grow cold. * * * There are eye witnesses at Brussels of this fact."

In the *Tattler*, No. 260, Addison continues to make merry over the misfortunes of the early victims of syphilis, pointing out how appropriate it was, in the painting of Corregio, to represent the dimpled God of Love taking lessons in archery from Mercury. He affirms that his arrows were dipped in poison and the boy aimed them at his quarry's nose, not his heart. Taliacotius was the first "clap-doctor," whom Addison had met with in history, and was very celebrated, but he had made the awkward mistake, in the case referred to in "*Hudibras*," of grafting on a swarthy Portuguese's features epidermis removed from that part of the anatomy of a fair-skinned German which is not exposed to the sun's rays. There is much more of this sort of banter, which seems to have been acceptable to the readers of this classic English author in his day. In spite of much indelicate but merry satire of this kind, so brilliant were Tagliacozzi's real results that the theologians, continually on the alert for that sort of alliance in others, considered him in league with the devil, or, at least, exceedingly impious in presuming to engage in a work they were bold enough to ascribe exclusively to the Almighty. Some nuns declared after his death (1599) they heard a voice exclaiming that he was damned, so they dug up his body from consecrated ground and cast it out. Thereupon his colleagues in the anatomy school at Bologna raised a statue to him, where he stands immortalized, a nose in his hand. (Whittington.)

Having noted the advent of Syphilis in medical history, and its influence upon the diseases of the nose and throat, we now take account of the other contagious diseases which become prominent in the records at this time. Except for accounts of sporadic cases of diphtheria, which we are able to recognize in the very oldest records of medicine, reports of Influenza, unnoticed by the Greeks and Romans and Arabians, were the first to emerge from the ob-

scurities of the Dark Ages. While Creighton* makes a doubtful reference to the disease, reported as early as 1173 A. D., Ozanam† says of Catarrhal Fever: "One of the oldest epidemics of this time, of which there is no mention since the beginning of the Christian era, is that of the month of August, 1239, which one finds noted in the chronicles of the Frères Mineures. The same chronicle speaks of another in 1311 in France, where many perished from it." He speaks of it as occurring in Florence in 1323, throughout all Italy in 1327, and there was another epidemic in 1358, again in 1387 and 1400. In France records report it in 1403, 1410, 1411, 1414, 1427, 1438, 1482, 1505. Creighton finds traces of it as occurring in England during the reign of Henry VI (1427). If it is really influenza which is referred to, according to Creighton, by Rodolphus de Dicete as occurring in 1173, we may see from the phrase "Universus orbis infectus ex æris nebulo corruptione," that his idea of the etiology was quite excusable. Anglada‡ quotes Felibien as follows: "In 1414 there prevailed a northwind so contagious that it caused a very frequent disease which they called 'coqueluche,' 'the tac' or 'the horion.' It was a kind of a cold, which caused such hoarseness that the Parlement and the Chastelet were obliged to interrupt their sessions. There was loss of sleep, great pains in the head, in the loins, and throughout the rest of the body; but the disease was not mortal except in old people." The French names for it were Influenza, Coquette, Petite-Poste, Follette, Horion, Tac, Grippe. The word Influenza was not adopted in England until 1743, the early English designation being "Mure" or "Murre," probably from the same root as "Murrain." It was occasionally called "the new disease." De Thou in his Universal History speaks of it as occurring in 1580§ thus: "A new disease, called in Italy Vervecinus (pertaining to a sheep or a wether) which first proved deadly in the East, then in Italy and later in Spain; for from this Anna, the wife of King Philip (II of Spain), died, and Gregory XIII (who reformed the Calendar) was dangerously ill with it." It is probable that King Philip had also been ill with it, for we read in Prescott an affecting account of his devoted Queen, his third consort, praying that he might be spared and she taken, a supplication which was granted. De Thou speaks of the astounding rapidity of the progress of the disease, and enumerates

Nomenclature.

* History of Epidemics in Britain, Vol. I, p. 398.

† Des Maladies Epidemiques, Tome I, p. 260.

‡ Etudes sur les Maladies éteintes et les Maladies nouvelles.

§ Ozanam has made a mistake, evidently from misconstruing the Latin text, in referring De Thou's remark to 1510.

some of its striking symptoms. He also says that "Coqueluche" is a name first given to it in 1510, but we have noted this name in Filibien a century earlier. It was in this latter year, according to Creighton, that Erasmus suffered from it. According to the same authority, that lovely, wicked, puzzling heroine of history, Mary Queen of Scots, is said to have suffered from it in 1562. We find in the old Latin and French works the word coqueluche, coccolucie, and it is thus frequently indistinguishable, as is occasionally the disease itself, from whooping cough, the first intelligible account of which was given by Ballonius in 1578, though Sprengel refers to Mezeray as mentioning the occurrence of whooping cough in 1414, when, as we have seen others speak of an epidemic of Influenza, Sprengel (III—85) says this French name for whooping cough arose from the hood or "cucullio" with which the sufferers covered their heads in France in the epidemic of 1510, or perhaps from Coquelicot, the name of an herb, which was at first employed in the treatment of it. I have been thus prolix in the account of the confusion as to this French term, and the evident confusion of the diseases, for which it stood, in order that the lack of differentiation of two distinct maladies may be seen, a little prior to the time when the separate study of the affections began. As a matter of fact, we may plainly perceive that in this instance we have now no means of knowing, with surety, what epidemics were whooping cough and what were influenza, in and before the sixteenth century. We may venture to apply the lesson thus learned to the apparent origin of other epidemic diseases, and we recognize that new knowledge was coming in to the world to bless mankind, and not new diseases to afflict it. Ballonius' description unmistakably identified whooping cough*. He himself declared he had never read an author who had given a description of it. Notwithstanding the assertion of Sprengel (V 595) that Hoffmann first described Influenza in 1709 under the name of Catarrhal Fever, it is evident from the following citation that he was preceded by many years by Willis, who, describing the Catarrhus Febrilis of 1658, says:† "About the end of April an affection suddenly blazed forth which, as though blown from the stars by some sudden gust, all at once fell upon many, so that in some towns in the space of one week, more than a thousand men were prostrated. The pathognomic symptom of this disease, and that which first attacked the patients, was a troublesome cough with profuse expectoration and catarrhal discharge from

* *Epidemiorum et Ephemeridum Libri II.* Edit. 1640, p. 237.

† Willis: *Opera Omnia.* Edit. 1682. De Fabribus, Cap. XVII, p. 202.

the palate, throat and nares. There was febrile disturbance, which was accompanied by heat, thirst, prostration, unaccountable lassitude, and severe pain in the back and limbs." "Many of those of weaker constitution succumbed, but the strong recovered." He himself died of it in a later epidemic (1675).

Hoffmann* speaks of it as a quotidian remittent fever epidemic in 1709. Juch† describes the catarrhal fever raging as an epidemic in 1741 in many provinces of Germany, and Huxham‡ says that the catarrhal fever which spread through all Europe under the name of the Influenza in 1743 frequently became pleuritic or peripneumonic. John Fothergill§ speaks of an epidemic which appeared in London in 1775, and many physicians replied to his circular letter inquiring into it, since it prevailed generally throughout the British Isles, where it was at that time known as the Influenza.

These accounts do not by any means include all the records of epidemics of Influenza occurring before the nineteenth century, but are sufficient to prove its frequency and its antiquity. It is hardly worth while to pursue the history of it further.

Again it is in the sixteenth century that the description of an epidemic of diphtheria is first to be noted. It is to be found in the works of Forestus|| "Anno 1557, a Christo Salvatore nostro nato, mense octobris, gutturi morbus epidemicus adeo Alcmariæ grassabatur, ut integras familias subite invaderet; ita ut inter duos tresve septimanas ex hoc malo in eadem urbe ultra ducenti homines extincti sint."¶ Forestus seemed to think the disease arose from a certain wind, which, with a dense, bad smelling fog, had preceded it. Wierus, a German physician, described an epidemic occurring in 1563, and Sanné refers to a passage in Ballonius, which, by the way, I cannot find, where a membrane is described as having been found in the trachea on autopsy in 1576. Ludovi-

Diphtheria.

* "Opera Omnia," Edit. 1740, p. 47-48. (Sprengel.)

† Juch: "Disputationes ad Morborum Historiam," Haller, Tomus V, p. 297.

‡ An essay on fevers, etc., etc.

§ "The Works of John Fothergill," Edited by Lettsom, 1784, Vol. III, p. 251.

|| L. C. Liber, VI, p. 1—De Febris publice grassantibus. According to Chauveau (Annales des Maladies de l'Oreille, etc., etc., Nov. 1901) Paracelsus described diphtheria under the name of "Prunella" before either Forestus or Baillou.

¶ This little city of Alkmar in the Netherlands where Peter Forest saw and described an epidemic of diphtheria, and where he himself contracted the disease, was sixteen years later threatened with another calamity. "If I take Alkmar," writes the Duke of Alva to King Philip, "I am resolved not to leave a single creature alive; the knife shall be put to every throat." "Motley's Dutch Republic," Vol. II, p. 464. The bravery of the inhabitants saved them from this merciless fate.

cus Mercatus*, who died in 1599, gives a long account of the epidemics in Spain in 1583 and subsequent years. It was called Garrotillo, after an instrument the Inquisition had made them familiar with, which was used to strangle people. He described the membranous condition of the throat as "pustules of various colors, especially verging towards the black, surrounded by fœtid mucosities, with putrefaction and softening of these parts." A child bit the father's finger, while he was attempting to extract membrane from his child's throat, and he died two days later of the disease, which phenomenon excited the wonder of the author, who had referred the causes to changes in the patient's temperaments, or to atmospheric conditions. Thomas Bartholinus†, writing in 1646, says that the "Suffocative Angina of children is like an epidemic disease, which from the year 1618 like a pest attacked children, and infected and killed others at Naples." "From the effects of the comet of the year 1618, Elisæus, a learned physician of this city, deduced the virulence of this disease." Gurlt (l. c.) gives the following extract from the brochure by Andrea Sgambato, "De pestilente Faucium," relative to an epidemic of diphtheria in Italy in 1617, after the appearance of three comets in the sky: "The torches of the comets were not yet extinguished, when a pest began to rage among the children which at first, especially in winter, spared no one. With such celerity did the infection pass from one to the other, that in a few days a father had to mourn the loss of all his children. It spared neither rich nor poor, and ravaged places apparently salubrious in the country before the city."‡ In the form of a commentary on Aretæus' work on the subject, Marcus Aurelius Severinus describes his experience with the pestilential sore throat at Naples in 1618§. Bretonneau in the Additions to his work (l. c.) transcribes an extract from a letter of Chisi (1748 ?), concerning the disease, which is clearly identified in the description he gives of an attack in his own son followed by diphtheritic paralysis. Huxham, whose notice of the disease in 1775 is included in his essay on Fevers (l. c.), ascribes to Fothergill, in 1748, the first accurate account of malignant ulcerous sore throat in England. Dr. Francis Home, of Edinburgh, in 1765,

* "Ludovici Mercati Opera Omnia."

† "Epist. Med.," XLIX Centur., I, p. 205, Edit. Hague, 1740.

‡ Bretonneau: "Des Inflammations Spéciales du Tissu Muqueux et en Particulier—de la Diphthérie", 1826, translates Carnevale's description of the epidemic in Naples in 1618, following the comet (De Epidemico Affectu). He also gives extracts from several ancient authors I have not had the opportunity, or have not taken the space to mention.

§ "De Recondita Abscessum Natura," Frankfort, 1643.

published his famous work on the disease in the larynx, to which he was the first to give in medical literature the Scotch word of croup.* It was a work which for a long time was widely quoted, but apparently it included many cases of spasmodic laryngitis in children, as indeed continued to be the case in the diagnosis of diphtheritic croup, until the advent of bacterial classification. If the differential diagnosis is here at fault in comparison with modern knowledge, it is still more so in many other reports, in which it is impossible to be sure that scarlet fever was not included in the category of malignant sore throats. In very many of the reports, this is self-evident. Scarlet fever, which becomes first clearly recognizable in the works of Ingrassias (1510-1580) as *Rossalia*, and in that of Ballonius (l. c.) as *Rubiola*, was first called "febris scarlatina" by Sydenham. It has often appeared as an epidemic when diphtheria has also been prevalent. This confusion is noted in the early work of Fothergill,† who first noted these throat disorders in England in 1739, and the same criticism may be applied to the work of Huxam. This is still more apparent in the early American accounts of throat epidemics. Dr. William Douglas communicated to a medical society in Boston his observations, which had as a title, "The Practical History of a New Epidemical Miliary Fever with an Angina Ulcusculosa,"‡ which raged in Boston, but first broke out in Kingston township, fifty miles eastward of Boston, on the 20th of May, 1735. Dr. Douglas, however, as may be judged from the title, did not recognize it as the disease described by Forestus. Dr. Cadwallader Colden, in 1735, is said also to have published a treatise on "The Sore Throat Distemper," and it is to him that Samuel Bard, M. D., in 1771, dedicated his essay, "An Inquiry Into the Nature, Cause and Cure of the Angina Suffocativa or Sore Throat Distemper,"§ a work so highly esteemed by Bretonneau that he translated it into French. Dr. Jonathan Dickinson, the first president of Princeton College, also described the epidemic of 1734-1735 in a letter from Elizabethtown, N. J., to a friend, which was afterwards printed as a tractate in 1740, "Observations on That Terrible Disease. Vulgarly Called the 'Throat Distemper.' " Angina was epidemic many times in New England from 1733 to 1787, and, without a

Confusion
with Scarlet
Fever.

* "An Inquiry into the Nature, Cause and Cure of Croup."

† "Works by Lettsome," I, 365.

‡ *Ibid.*: "An Essay on Scarlet Fever." Caspar Morris. 1853. Appendix.

§ A very rare book, I believe, but to be found in the library of the New York Academy of Medicine.

Beginning Differentiation of Throat Affections.

doubt, this was probably both scarlatinal and diphtheritic according to our present nosology. Perhaps no better example of this undifferentiated state of acute throat inflammation can be found, after the decline of the Hippocratic pathology and the classification of Aretæus, than in the works of Christian Gottlieb Ludwig,* whose namesake, eighty years later, gave the patronymic to a well-marked septic condition of the pharynx. The eighteenth century Ludwig drew a sort of composite picture, which in a few years was to begin to undergo a process of resolution into its component parts. Nevertheless modern differentiation of throat affections may be said to have begun at this time. Rush† and Chalmers‡ evidently confounded spasmodic and diphtheritic laryngitis, but Rush later, in his works, recognized them as two different diseases. John Millar, to whom Rush addressed a letter on the subject, described "pseudo-croup" and wrote on the asthma and whooping cough in 1768-69. Wichmann,§ in 1794, still further developed the differential diagnosis, Michaelis having, in Germany, exhaustively described true croup in 1778.

Tracheotomy.

An account of the history of tracheotomy naturally follows that of diphtheria. Since the days of Paulus Aegineta, who himself simply quoted from an earlier author, the opening of the air tube was described by the majority of systematic medical writers, but apparently practiced by none whose records have reached us until the time of Brasavola. Numerous Arabian and pre-Renaissance writers mention it. Lisfranc, Nicholas Florentinus, William of Salicet, Petrus d'Abano, all make reference to it. Some have ascribed to Beniveni, who died in 1502, the first actual operation, but a reference to the 1507 edition of his book|| discloses the fact that his operation was an external pharyngeal incision into a peri-pharyngeal or perilaryngeal abscess, and by no means a tracheotomy, though it was successfully done for the purpose of relieving dyspnea. It is doubtful whether Guido-Guidi ever performed the operation, though he recommends and describes that of Antyllus as a desperate resort, and he describes and figures silver and gold tracheotomy tubes.¶ He was a friend of Cellini, and died in 1569. Casserius ascribes to Brasavola, who died in 1555, several operations for tracheotomy, the

* "Institutiones Medicinæ Clinicæ," 1758, p. 134.

† "Medical Inquiries and Observations."

‡ "An Account of the Weather and Diseases of South Carolina," 1776.

§ "Ideen Zur Diagnostick."

|| "De Abditis Nonnullis ac Mirandis Morborum et Sanationum Causis." Obs. XXXVIII.

¶ "De Curatione Membratim Vidi Vidii Junioris." Liber VIII, Cap. 5.

first operation being, according to Sanné, in 1546. Brasavola is quoted as saying: "When there is no other possibility, in angina, of admitting air to the heart, we must incise the larynx below the abscess," etc., etc. (Holmes.)

Casseri^{us} practiced the operation which his master, Fabricius, described and defended. Casseri^{us}' work* is a very fine dissertation on the anatomy of the larynx and the ear, but his description of the operation of tracheotomy which he himself performed is not equal to that of Fabricius, who never did the operation.

Gurlt† seems to understand that Casseri^{us} incised the tracheal rings, but I do not understand that the "divisis annulis" is to be so construed, but rather that they were separated, as in the operation of Antyllus. This is borne out by the description of Fabricius, and by the subsequent history of the operation. It is probable that the difficulty in differential diagnosis, as to the site of the obstruction in respiration, at a period before they knew anything either of laryngoscopy or of the physical diagnosis of pulmonary conditions, and perhaps the lingering criticism of Aretæus, that it was the "pneuma" itself or the vital principle which was affected in these cases, caused physicians to falter in what, to us, seems the most pressing of indications for operative interference. The dangers of the operation were also grossly exaggerated. So well did Casseri^{us} appreciate these fallacies that he declared that those who rejected bronchotomy are "inhuman, awkward, timorous, and are even, as it were, to be held as homicides." Casseri^{us}' work was published 1600 and that of his master, in which I have found the reference to tracheotomy, in 1617. Apparently, therefore, he preceded him in the boldness with which he advocated the operation. Certainly he surpassed him in having himself performed the operation. Since, in Fabricius' long dissertation on the subject, he does not allude to Casseri^{us}, who was his favorite pupil and his successor, we may conjecture that the former's chapter on the subject must have been written, at least before Casseri^{us} published his book.

It is thus that Fabricius ab Acquapendente, in florid Latin, eloquently praises the operation of opening the Aspera Arteria:‡ The Operation
of Fabricius.
"Of all the surgical operations, which are performed on man for the preservation of his life by the physician, I have always judged to be the foremost that by which man is recalled from a quick death

* De Vocis, Auditusque Organo, Historia Anatomica, 1600.

† Geschichte der Chirurgie, II, 487.

‡ "Opera Chirurgica.," De Chirurgicis operationibus, Cap. 44, Edit. 1723.

to a sudden repossession of life, a feat which raises the surgeon nearest to the level of Æsculapius; that operation is the opening of the Aspera Arteria, by which patients, from a condition of almost suffocating obstruction to respiration, suddenly regain consciousness, and draw again into their heart and lungs that vital æther, the air, so necessary to life, and again resume an existence which had been all but annihilated." Fabricius reviews the disputes of former authors as to its utility, and says that it is useless when the lungs are affected and the whole trachea is full of material. "It is justifiable, in short, when the obstructing matter is only in the larynx above the place of incision. When below, it is to be refrained from." He assures us, contradicting himself somewhat, that even when there are some signs that the trachea is full, we should still operate. To escape the criticism of perhaps hastening death, "and because from the operation no small emolument may be derived," he advises that the patient's friends should be told of the desperate nature of the case. The operator should be a good anatomist. The fauces should be first explored with the finger, alone or armed with a short knife, bound to it in order to rupture any abscess which may be present, but if the trouble is in the larynx this is of little use. He is the first (unless it is Casserius) to criticise the transverse skin incision of the ancients, and counseled that it should be made vertically over the third and fourth tracheal cartilage. He defends the operation against the criticism of Aretæus with quite modern arguments. As for the cartilage not healing by primary intention, would it not heal by secondary? But even if it should not heal, the soft parts would sufficiently cover it. A longitudinal mark with ink was to be made down the middle line of the neck and a cross mark at the point of tracheal incision—scarcely the breadth of a thumb below the lower border of the larynx. Fabricius describes the canula more explicitly than Guido. Straight and curved canula were in use, but Fabricius preferred the former. He declares that the surgeons of his own time, frightened by the warnings of the ancients, *have not* performed the operation, nor has he himself done so. Notwithstanding this work of Fabricius seems first to have been published in 1617, though presumably written several years earlier, it cannot be doubted that the operation was more common than we should infer from his remark, for Ballonius† in 1574, in considering the advisability of the

* The cartilage is always spoken of, but of course it is the tissue between the rings which is referred to.

† "Opera Omnia," Tom. I, p. 163. Epidemorum et Ephemeridum, Lib. II.

operation, said: "Of course it is dangerous, but if it is done by a skillful hand, which knows how to avoid the recurrent nerves, it is free from danger. It promises certain safety. At any rate it is better to try a doubtful remedy than none, and it may be that it is omitted to the great detriment of patients." It is probable, therefore, that Fabricius' work on the subject had been written before that of Casserius, and it is evident that the operation had been growing in favor in the fifty years which had elapsed since the time of Brasavola, and had probably been often performed in that time. Marcellus Donatus in his curious book*, first published in 1586, strongly urged tracheotomy when indicated, and in spite of the little esteem which his work has met with at the hands of the historians, he was one of the first to urge the pressing importance of post-mortem examinations. Habicot†, who was something of a charlatan, published a tractate entitled: "Question chirurgicale, dans laquelle il est démontré que le chirurgien doit absolument pratiquer l'opération de la bronchotomie, autrement la perforation de la flute ou tuyau du poulmon" (1620.)

His experience consisted principally in two operations on persons not affected with angina, one a wound of the larynx and another a case of foreign bodies—gold pieces—in the pharynx. He describes the size and forms of tracheal canulæ. Louis, who has given a most excellent history of the operation,‡ quotes from Fonseca, a Portuguese author who died in 1632, the curious history of a young surgeon of London who was bribed to attempt to save the life of a robber who was to be hung. He made an incision into the trachea and inserted a tube. The noose failed thus to shut off the malefactor's breath, but, being a heavy man, although life was not extinct when the body was delivered to his friends, he died, very shortly after regaining consciousness, from the effect of his great weight producing other fatal damage.

Sennert,§ a voluminous writer in the early part of the seventeenth century, who, on a careful inquiry into the efficacy of birds' nests in angina, came to the conclusion it was due to the bird's dung mixed with the dirt, approved of tracheotomy in desperate cases, if performed by skillful hands. In 1646 the question of tracheotomy was discussed in the letters of Thomas Bartholinus and Moreau.¶ The

* "De Medica Historia Mirab.," Lib. III, Cap. 1, 1613.

† See extract from his work cited in "Dict. Hist. de la Medecine," sub voce.

‡ "Sur la Bronchotomie." *Memoires de l'Academie Royale de Chirurgie*, 1784. T. IV, p. 455.

§ "Opera Omnia," Tom. II, Lib. II, cap. 24, Edit. 1641.

¶ "Thomæ Bartholini Epistolæ Med. Centur.," I Epist., LXXX and LXXXI, Edit. 1740.

latter says, writing from Paris: "As for me, I have seen innumerable people, suffering with angina, saved by venesection alone from the arms, so often praised, fewer carried off by the neglect of the administration of remedies at the proper time, and a very few in whom bronchotomy might have been judiciously and seasonably used." He describes the operation he performed on a soldier, in which he made use of the transverse incision, and used a curved leaden tube with strings to attach it around the neck. He had performed it also in children, and one should not wait until they are nearly suffocated, he says. In them a shorter tube is to be used. In another work of Bartholinus* he mentions that John Van Horne, in dissecting the body of a man dead of phthisis, pointed out, among other operations, the place for a laryngotomy. Although Sprengel asserts (VII, 144) that Frederic Dekkers was the first to recommend paracentesis of the trachea in a work published in 1694 on bronchotomy, Sanné states that, according to Malavicini, Sanctorius (died 1636) first made use of a trochar, the canula of which he left in the wound for three days. This procedure, laryngocentesis, was also described in 1748 by Garengéot.† For the reasons suggested, or perhaps for others less apparent, tracheotomy found its way into favor very slowly. The singular mistake of Detharding,‡ in the early part of the eighteenth century, although it doubtless caused many useless operations, must have done much to familiarize the profession and the laity with the operation. His advocacy of tracheotomy in cases of drowning, advanced in 1714, arose from the observation that the lungs and the stomach of a drowned person did not contain the water, which had formerly been supposed to be the cause of their death. As one of his arguments he cites Wepfer, from whom we have had occasion to quote, as having incised the trachea of a beaver after having been held under the water until drowned, and as having been unable to press any water out of the lungs. He supposed that the structure and action of the glottis and epiglottis prevented, not only the entrance of the water, but frustrated the subsequent efforts at artificial respiration. He counseled, therefore, doing a tracheotomy and blowing air into the lungs. While this idea was frequently put into practice by many eminent surgeons for more than a hundred years, it never was universally accepted as a proper procedure, and it finally fell into disuse.

Laryngocente-
sis.

* "*Acta Medica Hafn.*," T. I. Edit., 1673.

† "*Traité des Operations*," etc., 2d Edit. Perhaps also in the 1st Edit., 1720.

‡ "*Epistola ad Luc. Schrockheim. Haller's Disputationes Chirurgicæ*," T. II, p. 428.

RHINOLITHS.

BY S. S. BISHOP, B. S., M. D.,

Professor of Diseases of the Nose, Throat and Ear in the Illinois Medical College, and in the Post-Graduate Medical School and Hospital, Chicago.

The subject of rhinoliths (literally rhinestones), is so little written about that the following case may present some points of interest. A lady, 59 years old, consulted me on account of an intolerable itching in the left external auditory canal, accompanied with frequent attacks of hyperaemia and intense heat in the same canal and in the corresponding auricle. She had, also, a chronic non-suppurative inflammation of both middle ears, the left one being the worse.

As usual, I included the nose and throat in the examination, although she made no complaint regarding them. There was an obstruction in the right nasal fossa, but it was so disguised by the nasal secretions that it was impossible to determine its character until the probe was brought in contact with it. Then the hard, gritty, characteristic sensation imparted by a stone was readily apparent. It was slightly movable, and was found to be lying on the floor of the inferior meatus, nearer the posterior than the anterior naris. According to some authors rhinoliths are generally found near the anterior naris; according to others they may be found in the middle, or the superior meatus.

After cleansing, disinfecting and anesthetizing the cavity I seized the calculus with strong forceps and attempted its extraction, but it remained firmly fixed. The size of the concretion rendered its extraction by the natural channel impossible. Powerful crushing forceps were then brought into requisition, and the stone was reduced to fragments, as shown in the accompanying illustration.

No difficulty was experienced then in taking out all of the parts of the calculus. It was found to weigh 71 grains, and some of the parts, like the second and third of the large specimens in the top row, have a coral formation. This feature does not show in the third specimen referred to, because of the faulty perspective.

Treatment was addressed to both the nose and ears, after the operation, which was in May, 1899, and there has been no recurrence of a rhinolith, or trouble of any kind in the nose since. The

exasperating itching and heat in the ear, which had driven the patient to thoughts of suicide, have succumbed to treatment.

It may be worth while to refresh our memories in respect to the nature of these nasal stone quarries. Rhinoliths consist of the salts of the nasal secretions deposited on some nucleus, such as a foreign body, necrosed bone or a blood clot. They are composed of calcium phosphate and carbonate, magnesium phosphate, sodium chloride and small quantities of organic matter, such as mucin and proteid material. They vary in color, form and size. Some are gray, while others are brown. The rhinolith shown herewith is greenish brown. The photo-engraving represents the exact sizes



Fragments of a rhinolith, exact size, weighing 71 grains, from a woman 59 years old.

of the fragments, all of which, before the operation, constituted one calculus.

These concretions are, in effect, foreign bodies, and give rise to both subjective and objective symptoms. Among the former are nasal irritation, headache, obstruction, defective and perverted sense of smell. The objective symptoms are a serous, mucous, purulent or bloody discharge from the nose, with a disagreeable odor in some cases, and impaired resonance of the voice. The septum has been found deflected sufficiently to hide the stone in several instances.

To illustrate the ease with which a rhinolith may be overlooked, it is only necessary to mention that a number of physicians had examined the nasal fossa containing the large calculus referred to without detecting its presence. On account of the angularities and sharp spicules of these bodies much care must be taken to avoid injury to the surrounding tissues during the operation for their extraction.

103 State street.

"A CASE OF CORRECTED EXTERNAL AND INTERNAL DEFORMITY OF THE NOSE."*

BY T. PASSMORE BERENS, M. D., NEW YORK CITY.

Mr. "X.," aged 26 years, came to me with history of injury to the nose received in early childhood. The nose, as you see in photograph, (A), taken before the operation, was a large one and presented the following conditions. The bridge of the nose was much elevated, very large, deflected to the left and had a concavity on the right side, while there was a corresponding convexity on the left side, i. e., the whole bony framework had been pushed to



the left and formed a large disfiguring "hump." The right nasal bone was smaller than that on the left. The soft parts of the nose were pushed to the right, and the tip occupied a position one-half inch to the right of the center of the lips.

Internally. The septum was deflected to the left and adherent to the upper two-thirds of the inner border of the outer wall of the vestibule, causing an almost complete occlusion of the naris. The right naris was free, and showed clearly the concavity of the deflection extending into the perpendicular plate of the ethmoid bone.

*Presented at the Seventh Annual Meeting of the American Laryngological, Rhinological and Otological Society, New York, May 23, 1901.

The operation performed under ether anesthesia was as follows: A vertical incision through the skin and periosteum was made from the center of the root of the nose over the hump down to the middle third of the soft parts. The periosteum with the adherent skin was pushed aside with a periosteotome, and the nasal bones and part of the lateral cartilage laid bare. The bony hump was removed with a chisel. The flaps of the skin and periosteum were then trimmed of their redundant tissue, and two small bleeding points coming from the lateral cartilages were touched with the galvano cautery, the wound was closed by a sub dermal suture. It was then dressed with flexible collodion without gauze. The septum was then freed from its adhesions by incision and broken with Adams forceps, the breaking being carried well into the vomer and perpendicular plate of the ethmoid bone. The right nasal bone was grasped with the same forceps and bent outward by breaking it from its articulations, the left nasal bone was forced into place by a few strokes of a mallet, the soft parts having first been protected by a quadrilateral steel bar guarded with heavy rubber tubing. A splint made of sheet gutta percha bent upon itself and properly shaped was inserted in the left naris, and the nose moulded into a straight line by the fingers. No external appliance was used to hold the nose in shape, and I wish to emphasize this point particularly. The external wound was found healed five days after the operation, and the dressing permanently removed. The splint was carried four weeks. The patient is before you for examination. Photograph (B).

DR. F. SEMELEDER.

We regret to announce the death of Dr. F. Semeleder, at Cordoba, Mexico.

Dr. Semeleder practiced laryngology in Vienna, but afterwards removed to Mexico, where he became the special physician to the Emperor Maximilian.

Dr. Semeleder was a member of the editorial staff of "The Laryngoscope," but declining health in the past few years prevented his active co-operation.

TUBERCULAR AND SYPHILITIC GRANULOMATA OF THE NOSE.*

WILLIAM LINCOLN, M. D., CLEVELAND, OHIO.

In the literature of tuberculosis and syphilis of the nasal mucosa not much study has been devoted to the form of tumor described by pathologists as infectious granulomata, and in the few histological reports made of the granulomata it has generally been assumed that the tumors which showed under the microscope the presence of giant cells were to be classed as tuberculous in origin and not syphilitic. I thought it therefore of sufficient interest to report to the Association these two cases which I had under observation at the same time, in which granulation tumors exactly similar, not only in their gross appearance and situation, but in their histological structure as well, had these different specific diseases as their causative factors. Of interest also is the appearance upon the nasal mucosa of a granuloma as an evidence of syphilis, the lesions of this disease observed by rhinologist being almost always ulcerative and not neoplastic.

Case I.—Lakeside Hospital Dispensary, March 6, 1896. E. C. Female, aged forty; unmarried, *puella publica*. Family history negative. History of disease: Contracted lues five years ago. Treated for a short time and discontinued after disappearance of skin manifestations. One year ago ulcers began to form upon the hard palate. These were sluggish and painless. Six months ago she began to have slight obstruction to free breathing through the right nostril. This gradually increased and was accompanied by occasional slight epistaxis and seropurulent discharge, but no pain. To-day there exists almost complete occlusion of the right nostril and for this condition the patient applies for relief.

Examination.—Shows a mammillated tumor on cartilaginous septum in right nostril, rounded in contour, and measuring 20 to 25 mm. across the base. It is non-pedunculated, arising abruptly from the surrounding mucosa which is apparently healthy. This tumor bleeds easily, is firmly attached upon the septal tissue and presses upon the inferior turbinal. The color is similar to

*Read before the American Rhinological, Laryngological and Otological Society, Annual meeting, New York, May, 1901.

the surrounding mucosa. A probe passes freely above and below and to the outside of the mass, which is not painful to the touch. No sign of ulceration on the surface or about the edges of the tumor. On the hard palate are several ulcers 5 to 10 mm. across, characteristically syphilitic in appearance, and the scarred sites of many others. Other parts of the nose and throat are normal in appearance.

A piece of tumor removed for microscopical examination shows a structure typical of tubercular granulation tissue with the presence of giant cells.

Physical examination of the chest entirely negative. No subjective or objective symptoms of other trouble.

Treatment K. I. in increasing doses.

March 20.—Ulcers in mouth healing rapidly. Nasal mass decidedly less. Taking 45 gtt. of saturated solution of K. I., t. i. d.

April 10.—Ulcers in mouth healed, leaving scars. Septal tumor appears shrunken and whitish and about one-third of the original size. K. I. continued.

May 10.—Granuloma of septum disappeared, leaving slight depression at its site.

December 15.—Since the last date the patient was seen once, or twice at intervals of a month or so, but has not reported now for about six months.

Case II.—Lakeside Hospital Dispensary, May 22, 1896. C. S. Widow, aged 45. Family history: Maternal grandfather died of cancer, otherwise family history good. Patient is nervous and hysterical, has lost considerable flesh. Has occasional night sweats. One year ago had grippe followed by pneumonia.

Disease history: For the last eighteen months patient has been increasingly troubled with nasal occlusion in right nostril, accompanied by quite severe pain in and about the nose. Discharge somewhat profuse and of a muco-purulent character has been present almost all the time. Has been told she has a nasal polyp, and has come to have it removed.

Examination.—Pale red mass situated upon the cartilaginous septum by a broad base, 25 to 30 mm. across. The tumor is sessile, with mammillated surface, bathed in muco-purulent secretion. Tumor presses against the outer wall of the nose, and the probe is passed by the outer surface with difficulty and causes bleeding, but passes freely above and below the mass. The tumor seems imbedded in the mucosa which is slightly raised around it, but not

inflamed. No ulceration is seen on the surface or about the tumor. No other lesion is observable in the nose, mouth, pharynx or larynx. There is no lymphatic swelling. No history of lues.

Physical and bacteriological examination did not reveal tuberculosis of the lungs or elsewhere.

A small piece of tumor removed for microscopical examination shows the ordinary structure of a tubercular granuloma with giant cells, no bacilli could be found in these sections. Administration of K. I. and of K. I. combined with mercury for one month produced no diminution of the tumor, and therefore the whole mass was removed by means of a sharp curette. The scraping was carried well into the surrounding healthy mucosa and down to the cartilage. Three months after this operation nothing remained but a small ridge of indurated scar tissue opposite the middle turbinated bone. The site of the tumor, however, is now a slight concavity covered by apparently healthy mucosa. About eight months after the operation above described the patient returned with an exactly similar condition in the left nostril. The granuloma which has been growing for about four months according to the patient, and which is therefore not so large as the one removed, occupies an exactly similar site on the opposite side of the cartilage. The patient now gives unmistakable signs, both by physical and bacteriological examination of tuberculosis of the lungs. She has lost much flesh, night sweats are very frequent, and muco-purulent expectoration profuse. This second nasal tumor was removed by the cold snare, and a strong solution of lactic acid applied to its site. The patient was also given appropriate remedies and attention for her condition, but died of tuberculosis in four months. The ulcer resulting from the removal of the second tumor proved most rebellious to treatment.

In this case it seemed to me from these later developments that we had in the first instance to do with a case of primary tubercle of the nose, for at the time of its first appearance the most careful examination failed to reveal any tuberculosis of the lungs or elsewhere. The attack of tuberculosis to which she succumbed was of a very acute and virulent type, affecting not only the nose but the lungs and peritoneum as well.

In these two cases we have similar tumors whose sites were identical and giving rise in their first stages to similar symptoms which by physical examination and by bacteriological provings as well as by therapeutic tests, proved to be due in one case to syph-

ilis, and in the other to tuberculosis. The microscopical examination, however, in each tumor was alike. We had the typical granulation tissue containing here and there giant cells which is described by nearly all authorities as being peculiar to tubercular granuloma. Here, however, in our first case was a granuloma containing giant cells, which was undoubtedly due to syphilis.

I have examined a number of articles written by authorities upon these subjects. In one written by Manasse in 1893, there is a very exhaustive report of five cases of syphilitic granulomata of the nose with careful histological study of each case. Giant cells were found by this observer in all of the sections examined.

Seiler has also reported two cases of syphilitic tumors in the nose.

Major, in Burnett's System, cites, besides twenty-seven cases of tuberculosis of the nose, collected by Bosworth, seven of which are doubtful, twenty-three cases from various observers, twenty-two of which he believes correctly diagnosed. Since that date, due to more careful observation and histological study, many undoubted cases of nasal tuberculosis have been reported. Notwithstanding this, however, tuberculosis of the nose still remains one of the diseases rarely seen by the rhinologist, and granuloma is one of its less frequent forms.

Herzog in 1893, in a resume of the subject of nasal tuberculosis, published ten new cases and tabulated seventy already reported. Since then the subject has been treated and other cases reported by many observers, notably Hajek, Farlow, Chiari, Woblewski Theisen, Baurowicz, Koschier, Hasslauer, Wright and others. In Herzog's report a case is mentioned which illustrates very well the point which I consider of importance in my own cases, namely, that we can more certainly determine by physical examination and by therapeutic tests than by histological examination whether these tumors are due to syphilis or to tuberculosis. The case referred to was one in which a granuloma with other symptoms had been diagnosed as tubercular. The tumor as well as the other symptoms, however, rapidly disappeared under the administration of K. I. Herzog, however, states in the same paper that the presence of giant cells in a granuloma may be considered diagnostic of tuberculosis. This conclusion would not seem permissible when the findings of Manasse's cases and my own are considered. Zuckerkandl, in his description of syphilitic lesions of the nose, makes no mention of granulomata with giant cells, although he

notes the occasional occurrence of granulation tissue in connection with ulcerative changes. These granulomata containing giant cells he considers as occurring only in tuberculosis, and asserts that they sooner or later break down into ulcers, causing softening and loss of tissue. The local symptoms of these growths are alike whether the cause is syphilitic or tubercular. The masses bleed readily and cause a hypersecretion of mucus, or, if slightly ulcerated, a thin muco-purulent secretion may be present. Nasal obstruction causes its usual inconvenience, but is accompanied usually by very little pain. Concurrent signs of the specific disease causing the tumor were present in only one of these cases at first, the syphilitic one, but in the second case, the tubercular one, abundant signs of tubercular infection were present at the time of the second tumor. The appearance of the tumors with their mammillated surfaces raised sharply from the surrounding apparently normal mucosa is sufficiently distinctive to assure of their not being confused with other intranasal neoplasm except, perhaps, papillomata, which are sometimes quite sessile. These latter tumors, like the granulomata, are rare in the nose, but their site has generally been noted as on the turbinated bodies, usually the inferior, while the infectious granulomata have in nearly all cases been observed upon the septum. Microscopically, while it is hard to distinguish the specific granulomata from each other, their histological structure is unlike papilloma or any other form of malignant or non-malignant neoplasm.

To differentiate between the granulation tumors due to syphilis and those due to tuberculosis we will be helped as I have stated, more by the results of physical and bacteriological examination than by the examination of the histological structure. The treatment of tubercular granulomata should be the removal of the growth as completely as possible; this is indicated not only to rid the patient of a focus of bacterial invasion and activity, but also to remedy the local disturbance caused by its presence. The removal is probably best accomplished by means of a sharp curette, being careful to scrape down to the cartilage and well into the surrounding healthy mucous membrane. The syphilitic granulomata will yield to the usual treatment of late syphilis, but surgical interference is, I think, not contraindicated if the growth is sufficiently large to cause considerable obstruction, and this surgical

interference may be carried out in conjunction with antisyphilitic treatment.

Lakeside Hospital.

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DR. A. GUGUENHEIM.

Dr. A. Gouguenheim, senior editor of the "Annales des Malades de l'Oreille," was born at Metz on the 9th of January, 1839. He studied at Paris at the Charlemagne Lyceum. He commenced the study of medicine in 1857 and received his degree in 1861. In 1866 his first dissertation, "Aneurism of the arteries of the brain," received the silver medal of honor, an exceptional distinction at that time, and one accorded only to four theses during the year. This work has become a classic. His appointment to the medical staff at the Conservatory of Music and Declamation in 1873 suggested the idea to him that he devote himself more exclusively to the study of laryngology.

He practiced in the hospitals until 1877, when he began to study the specialty with Fauvel. He served in the hospital of Lourcine and two years after this published a remarkable work on "Secondary Syphilis of the Larynx."

In 1882 he worked at the hospital of Bichat, where was organized in his charge a chair of laryngology. In 1887 he was given the direction of the laryngological clinic, founded at the Hospital of Lariboisiere by Ismbart and continued by MM. Raynaud and Proust.

Gouguenheim gave a great impulse to the study of laryngology in these hospitals. Always alive to new ideas, he did not hesitate to encourage those tendencies which led the specialty more and more towards surgery. For many years his clinic at the Hospital Lariboisiere attracted numbers of French students and those of other countries, of whom many have become well known.

At the Conservatory Gouguenheim instituted in this establishment in 1893 a course of physiology and hygiene of the voice, afterwards published in the *Annales des Mal. de l'Or.* "The Singing and Speaking Voice," and later presented in book form.

Gouguenheim is dead and in the hospitals and the clinics where he labored for so many years he will be missed. To the world of science he leaves a large heritage, the results of his diffused knowledge of the specialty which he practiced so untiringly.

As senior editor of the "Annales des Maladies de l'Oreille," he exhibited an active and constant interest and influence in the progress of laryngology.

FIBROMA OF NASO-PHARYNX.*

BY J. H. PHILIP, M. D., SAN FRANCISCO, CAL.

The young man, whom you have examined to-night, was literally carried into my office on the morning of the 17th of February, 1901. For several days he had suffered from nasal hemorrhages, and he was very weak from loss of blood.

His parents informed me that he had undergone, a few months previous, several operations for the removal of nasal and post-nasal obstructions, and that each operation had been followed by great loss of blood; that the surgeon who operated, when informed that the boy was bleeding, refused to go to him (he lives near Ocean View), and suggested calling in the local doctor. This was done, and when I first saw the boy, gauze was projecting from both nostrils anteriorly. I was given to understand that he had been plugged anteriorly and posteriorly the previous evening, and since all hemorrhage had ceased, it seemed expedient not to remove the plugs at this time.

I put him at once upon Knox's gelatine (two boxes daily), and requested him to return on the morning of the following day. As soon as he arrived I removed the strips of gauze lying in the nostrils, but was rather surprised to note that they had no connection with a posterior plug. I then examined with my mirror the post-nasal space and saw there, completely filling it, a bloody mass which I assumed must be a plug. I attempted to remove it, handling it most gingerly at first, but later tugging at it with every instrument at my command. However, all my efforts to dislodge it were unavailing. I then called up, on the phone, my friend, Dr. W. A. Martin, asking him to come over and bring with him any instruments that he might deem appropriate—his volsellum forceps seemed just the thing, but, to my surprise, they, too, even in his hands, accomplished nothing. We then palpated the mass, and at once saw that it was not a plug, but a growth of some sort, very firm and elastic to the feel.

The mass so completely filled the post-nasal space that encircling it with a wire would be most difficult, so I attempted to reduce it

*Read before the San Francisco Society of Eye, Ear, Nose and Throat Surgeons, October 17, 1901.

by the use of lactic acid (suggested by Ingals), injecting into it every other day 15 minims; $\frac{1}{2}$ per cent solution of formalin was also tried. Finally, on June 20th, I removed it, using a cold wire, No. 5, piano, passing it around the growth and out through the left nostril. Several attempts were made, the wire breaking at each attempt; fortunately, at the last trial, though the wire again broke, the break occurred by the binding post of the snare; the two ends of the wire were then grasped by strong pincers, the patient's head resting against the wall and held there by firm pressure against the forehead, and a strong pull quickly tore the growth away from its attachment and out through the nostril—the hemorrhage was slight.

I have presented the patient to-night that you might see with what rapidity the growth is recurring. It seemed to spring from the periosteum, covering the under surface of the basilar process of the occipital bone, and the sphenoid, as well as from the posterior tips of the turbinated bodies, especially on the right side. My microscopist found that it was composed almost entirely of white fibrous tissue, and between the fibres a few spindle cells. The symptoms in this case were hemorrhage, mouth breathing, thick speech, deafness and pain in the right ear. The prognosis in these cases seems good if one can successfully remove the recurring growths, until such time as spontaneous retrogression occurs. The age seems to be about 23 years.

I notice that in a discussion on the subject of Fibroma of the Naso-pharynx, before the London Laryngological Society, last February, the general opinion was that these growths should be removed through the mouth, the soft palate being split, chiseling away the hard palate, if necessary. They seem to recur, however, just as frequently after such radical removal.

Specimen No. 2 is a fibro-mucous polypus, removed from the naso-pharynx of a boy nine years of age. It was pedunculated, the point of attachment being the posterior end of the middle turbinate.

Some authors consider these growths fibromata of a sluggish character. This case was interesting for several reasons—the nasal fossa was completely occluded by a bony ridge which prevented locating the point of attachment of the growth before its removal and, too, there was an accessory opening into the antrum on the same side, just above the junction of the anterior and middle one-third of the inferior turbinate.

SCHWARTZE-STACKE OPERATION FOR CHRONIC SUPPURATIVE OTITIS MEDIA; REFORMATION OF THE TYMPANIC MEMBRANE; SECONDARY MYRINGECTOMY; IMPROVED HEARING.*

BY M. D. LEDERMAN, M. D.,

Lecturer on Diseases of the Nose and Throat, N. Y. Polyclinic; Asst. Aural Surgeon, Manhattan Eye and Ear Hosp.; Consulting Aurist Bedford Hosp.; Fellow N. Y. Acad. of Med.; Am. Rhin., Laryn. et Otol. Soc., etc., etc.

Chronic purulent disease of the middle ear is an insidious affection, in which clinical symptoms do not always correspond to existing pathological changes. It is not unusual to find patients presenting seemingly serious symptoms, in whom but a small quantity of granulation tissue is discovered on opening the mastoid. Then again, the opposite state of affairs may exist, for we all, no doubt, have met with cases where the subjective symptoms did not lead us to suspect the presence of such advanced disease as the operation revealed.

Cholesteatoma and necrotic sequestra have been removed from the mastoid and middle ear in cases where pathognomonic symptoms were absent. A patient illustrating the preceding statement, was operated upon in private practice, for an excessive purulent discharge from the right ear. He was fifty-two years of age, of large stature and florid complexion. The disease of the ear had existed for six weeks, in spite of regular local treatment, so he consented to the mastoid operation, in the hope of being relieved.

A fistula was found in the posterior wall of the canal, from which there was a free discharge of sweet-smelling pus. No classical symptoms of mastoid involvement were present.

On opening the mastoid, I was surprised to find such extensive disease, with so little constitutional disturbance. The mastoid process was a mere shell, filled with pus and granulation tissue. Two loose sequestra of necrosed bone were removed with the forceps from the cavity. One of these was as large as a hickory-nut, while the other was about half the size.

The external wall of the lateral sinus was diseased, though the vessel itself was not affected. After a thorough application of the

*Read at the Seventh Annual Meeting of the American Laryngological, Rhinological and Otological Society, New York, May 23, 1901.

spoon curette, free drainage was established through the middle ear. The fistula in the posterior wall of the canal led into the anterior mastoid cells. The mastoid process was broad and deep, and the disease had progressed so rapidly that the resulting excavation readily admitted the introduction of four finger tips. The probe showed a depth of nearly two inches.

On the third day after the dressing had been removed, the probe was passed along the upper and anterior surface of the cavity, when suddenly the patient had a severe attack of vertigo in bed. This symptom demonstrated to my satisfaction that the semi-circular canals were in the immediate vicinity. The attack lasted but a few moments, and was the first of the kind that had shown itself up to that time. Later, however, he had slight attacks of dizziness, when the head was suddenly moved upwards. Some further exfoliation of osseous tissue was noticed during the healing of the wound, but a good result followed, with complete cessation of the aural discharge and fair hearing power. The purulent secretion stopped promptly after the mastoid was opened. Have seen this patient recently, and he has had no unpleasantness since the operation, which occurred two years ago.

The above history was cited, as it strikingly emphasizes the rapid progress of an infectious process, after the subsidence of acute symptoms. We must not overlook the fact that necrosis of the osseous structure in the mastoid may be active, even though the middle ear disease has assumed a quiescent state. In such cases it is not easy to form an opinion as to the actual state of affairs, and, consequently, no definite line can be drawn, as to the proper time for radical intervention. Each case must be judged from its clinical aspect, and when careful local measures have failed to permanently stop the suppurative process, more heroic methods should be employed.

Bacteriological examination of the discharge will lend its weight in arriving at a conclusion, if other symptoms are not indicative. The presence of streptococci or pneumococci in the secretion certainly favors surgical treatment.

The history of the patient upon whom this paper is based herewith follows:

Mrs. X., aged twenty-four, was referred to me by Dr. H. Stark, for an opinion as to the prognosis of her local trouble. The right ear began to suppurate at the age of eleven, following a blow on that side of the head. This symptom continued on and off, in spite of local treatment by different aurists, up to the time she

came under my observation. Granulation tissue had been removed at various times, with some improvement, but the discharge would soon return, bloody in character and very offensive. According to the patient's statement, no mastoid symptoms were experienced at any time.

For eight years, however, she has suffered from headaches over the right side. During the last four years the purulent discharge from the ear has been almost constant, though local treatment has been regularly carried on. The headaches still persisted, causing insomnia.

At my first examination, on October 23d, 1900, some foul smelling secretion was found in the right canal and middle ear. The membrana vibrans and the malleus handle had been absorbed. The probe revealed caries of the remaining portion of the malleus and incus, together with disease of the attic. A small quantity of pus was removed on the cotton tipped applicator from the postero-superior region of the middle chamber. Some tenderness on deep pressure over the mastoid antrum was detected. There was little pain in the ear, but the most disagreeable and distressing symptom was a constant, agonizing headache which caused insomnia.

Four days previous to my examination she had had two distinct chills, though no elevation of temperature was found during the examination. No other symptoms were present. Advised radical operation without further delay.

On October 31st, 1900, the mastoid was opened, according to the usual Schwartz technique. The membranous canal was pushed away from the posterior wall of the meatus, and held by a strip of gauze. An opening was then made through the eburnated cortical surface of the mastoid, and the antrum was found situated at a considerable depth. The lateral sinus lay very superficially, and to make matters more difficult, the dura dipped very low. It required delicate maneuvering to avoid wounding these structures, as the antrum lay between them; the sinus acting as a posterior boundary, while the dura was the upper wall. No pus was found in the antrum, but some granulation tissue was removed with a small spoon. With the aid of an angular rongeur forceps, the posterior wall of the canal was taken away, being guided by a probe in the antrum and additus.

The necrosed malleus and incus were readily extracted through the enlarged opening, and the additus and attic were thoroughly curetted. No disease was detected elsewhere. An incision was

made on a horizontal plane through the membranous canal, and the divided tissue was adjusted to the bone wound and held in position by a soft rubber drainage tube, inserted in the meatus. On account of the very offensive discharge which had existed, it was deemed judicious not to close the whole of the posterior wound. The upper and lower portions were sutured, and a thin strip of gauze, soaked in a fifty per cent enzymol solution, was placed in the posterior opening.

For five days after the operation the offensive odor persisted, though no pus was seen in the mastoid wound. On the sixth day the stitches were removed and union had taken place. Very little discharge was seen in the canal, but the odor was still present. The severe headache, however, had disappeared entirely.

The enzymol dressings were kept up for two weeks, and at the end of that time the odor could no longer be perceived. Nosophen gauze was then substituted and continued until the final closure of the wound, which took place in six weeks from the date of operation, with complete cessation of the discharge.

During the latter part of January, 1901, Mrs. X. noticed some tenderness over the mastoid. On examination, a secondary membrane was found in the usual position of the normal drum, but no signs of active disease could be discovered. The patient's pulse and temperature were normal, so anti-neuralgic medication was prescribed. This symptom of tenderness persisted for two weeks. Thinking that some secretion was pent up in the middle ear, the secondary membrane was removed. No fluid or pus was found, but a small quantity of granulation tissue was curetted from the posterior portion of the attic. My manipulations in this region induced a severe attack of vertigo, complicated with repeated attacks of projectile vomiting whenever the patient assumed an upright position. This unpleasant reaction occurred in the office, and the vomiting lasted for two hours. The labyrinthine fluid had evidently been disturbed. After resting in a recumbent position for the time mentioned, Mrs. X. was able to go home in a carriage. The dizziness continued for two days. Dry dressings of nosophen was the after-treatment employed.

The mastoid tenderness disappeared in two days, and up to the present has not returned. At one time the advisability of again opening the mastoid was strongly considered, but the patient agreed to abide by the result of the myringectomy. Fortunately, this procedure relieved the disturbing symptoms.

The cosmetic result of the radical operation was beyond expectation. No external deformity can be noticed. On examining the canal, the inner and posterior portion appears quite dilated, but it is all covered with skin. Another membrane has partially reformed with a central opening. No moisture has been seen since the last curettement. At the time of her first visit, my record shows that she heard the watch two inches; whispered voice two feet. During the last test, on May 21st, 1901, the watch could be heard at 45 inches; whispered voice 12 feet.

From these two cases, it is interesting to note the different degrees of local resistance. It is not unusual to find patients who have had repeated attacks of suppurative otitis, without extension of the infection to the neighboring cells. This type of the disease may be cured through the external auditory canal in a number of instances.

We must not forget, however, as cautioned by Macewen, that cases of intracranial pyogenic extension have occurred, as the result of removing aural polypi, which were protruding into the middle ear. These granulation masses project through the bone from the dura mater, which they serve to protect, so long as they remain intact. In removing them, a fresh surface with open mouths of vessels is exposed, and absorption through the softened brain membrane is apt to occur. The granulations afford a definite protection from the invasion of certain pyogenic organisms as long as they are left in position. This tissue may secrete, but it does not readily absorb, as it is not supplied with lymphatics. In removing these growths, we must take precautions that absorption through the wounded area will not occur.

The combination of objective and subjective symptoms may lead us to advise the radical operation in cases of purulent disease of the middle ear, which have resisted careful and regular local treatment. Suppuration of the mastoid itself can only be cured by opening the cells, as the disease in this region shows a tendency to progress, though the extension may not be rapid.

If the affection is united to the mastoid antrum, it may heal spontaneously, according to Jansen. This is more apt to occur if the antrum is small and situated high. If the position of the antrum is low, and it is of large capacity, the disease can only be cured by opening the mastoid.

The character of the discharge will assist us at times to determine the condition of the parts involved. A constant mucoid secretion coming from above, without subjective symptoms, suggests disease limited to the antrum, with an unobstructed passage. Such a case may get well without radical treatment. Where the discharge is irregular and quite offensive, it points to disease of the mastoid process, and operative intervention is indicated. Marked caries of the attic and tympanic walls, with excessive granulation tissue, which tends to recur after removal through the canal, demands more heroic surgery. Prolonged conservatism will at times be forced to the decisive step, by an acute exacerbation of a chronic suppurative process.

A CASE OF MASTOIDITIS WITH UNUSUAL CLINICAL HISTORY.*

BY RALPH W. SEISS, M. D., PHILADELPHIA, PA.

The following case is one of such unique history in my experience, that it is believed to be worthy of reporting in detail: Miss M. had been an occasional patient of mine for a considerable period. When I first saw her she was a vigorous, active girl of 23 years, giving the impression of unusual vitality; her family record, however, was not good, there being a distinct tubercular history. She suffered from very marked chronic sclerotic rhinitis and pharyngitis, and her left ear was suppurating when she first came under my care. The discharge from the latter ceased in about ten days, the perforation healing; the rhino-pharyngitis improved as much as these cases ever do, the discomfort being much relieved. The type of nasal inflammation was peculiar; in addition to wide-spread fibrosis, there were occasional attacks of acute suppurative ethmoiditis, and the septum showed a tendency to form islets of granulation tissue upon its mucous membrane; toward the end of the case this granulomatous tendency involved nearly the whole nasal mucosa, and necessitated the repeated removal of masses. The diagnosis at this stage was, of course, an easy matter. After losing sight of her for some months, Miss M. turned up again the end of last winter with a typical acute sero-purulent otitis media in the right or previously sound ear, the drum had perforated when I saw her and discharge was free. Pain and malaise were marked, and the temperature 101 degrees. She was put to bed and placed upon the following treatment: once in 24 hours I myself, very carefully syringed the ear with hot carbolized solution, 1-100, the fluid being allowed almost to dribble into the external canal. A small strip of gauze was then placed lightly in the meatus, this being renewed by the nurse every two hours. Hot water bags were used at the discretion of the patient, and, as usual, gave great relief; morphine was employed on one or two occasions, and sulphonal about twice as often to secure a night's rest. Sedative sprays were used with caution in the nose and throat by myself once daily. The treatment is thus fully detailed, not because it differs from that usually

*Read before the Section of Otolaryngology, College of Physicians, Philadelphia.

employed (I have myself used it in about 700 acute cases), but to show all that was done for the patient, that the therapeutic effects for good or ill may be fairly weighed. At this or no other time in the early history of the case was there the slightest "redness, swelling, heat or pain" in the mastoid region. Improvement was normally rapid, and the patient was soon about again with discharge reduced to a minimum, and of the usual purulent character. Very small amounts of acetanilid boric powder were now lightly dusted through the large central perforation three or four times a week, and the strips of gauze were discontinued. The otorrhoea subsided to a drop or two daily, and the patient was allowed to return to her home in Trenton, and to see me twice a week. Granulations now began to form in the fundus, and had to be repeatedly removed by the snare, and the girl seemed to make no progress. There were still at times vague complaints of periaural and occipital pain, but not a suggestion of mastoid otitis. Unable to arrange the repeated trips to Philadelphia, Miss M. passed from my care to that of Dr. Clark of Trenton, who skillfully continued about the same lines of treatment. I again saw the case, about two months after the acute attack; discharge continued intermittently, a number of granulations had been removed, there was no complaint of the mastoid region, which to the eye was normal. Placing my fingers behind the auricle, a very slight doughiness was felt about one inch behind the mastoid process, and firm pressure caused quite a jet of thin sero-pus to escape from the external canal. As Miss M. was unable to stay in Philadelphia, I sent her home with a letter to Dr. Clark. A short time later he laid open the mastoid region, found the whole outer table softened, and, of course, perforated, and removed a portion of it. The pus had dissected back under the scalp quite two inches behind the attachment of the auricle. There had been no fever, no special mastoid pain, no swelling or redness, no failing in general health, no change in the aural conditions, nothing that I can see to suggest mastoiditis, which was only discovered after softening and perforation of the bony wall had occurred by the routine palpation I always make in these cases. Conditions continued unfavorable, and a peculiar skin affection from which the young woman had for years suffered, now grew rapidly worse, and was pronounced by Dr. Stelwagon, under whose care she had long been, to be undoubtedly lupus. The general tubercular character of the case was at once explained, and its unique clinical history accounted

for. Miss M. is now absent in Colorado, and writes me that the ear still suppurates at intervals through both the external canal and mastoid sinus, that the lupus is extending, and her general health apparently at a standstill. Tubercular otitis media as a complication of pulmonary or laryngeal tuberculosis is a common enough affection, but I have never seen another case like the one narrated. This is also the first "mastoid case" which has developed under my observation while the patient was under my care. Slow tubercular infection of all the areas involved appears to be the explanation of all the lesions, and their slow and insidious character. The total failure of treatment to bring about resolution is also, of course, accounted for. What more could have been done I am not prepared to say, even after watching the course of the case. No one advises to make an exploratory mastoid incision for persistent suppuration of only eight or ten weeks' duration, and we unfortunately possess no specific for tubercular infection of mucous membranes.

PROF. EMILIO DE ROSSI.

Emilio de Rossi, ordinary professor of oto-laryngology at the Royal University of Rome, died November 12, 1901.

Born at Menton in 1844, at the age of twenty-one years, he received, after brilliant competition, a fellowship for the study of ophthalmology at Paris, but this field he abandoned to study otology. At the age of twenty-two years he returned to Italy and published his excellent work, which Schwartze declared to be the most comprehensive and interesting monograph on diseases of the ear. In 1870 he was called to the chair of otology in the University of Rome.

In 1881 he became Professor Extraordinary, and at the same time assumed the chair of laryngology. In 1891 he received the title of Professor Ordinary, which constituted not only a personal scientific honor, but was a recognition of the specialties to which he had devoted all his interestes from the beginning of his career.

His new ideas on the nature of rhino-pharyngeal polypi, his experiences in the therapeutic value of electrolyses for the treatment of malignant tumors, his plastic surgery of the ear, the operation for incudo-stapedial disarticulation and other interesting communications presented to the Academy of Medicine of Rome, and to the International Otological Congresses of Milan, Florence and Washington, established the reputation of De Rossi.

The influence and example of De Rossi contributed much to raise otology, especially in Italy, to an independent specialty.

De Rossi died when he had reached the acme of his work, and when he had the satisfaction of seeing the specialty, to which he had devoted himself, accorded an independent position among medical sciences.

Just prior to his death he had prepared the third edition of his excellent book, and given to the medical profession his method of plastic operation on the larynx.

SOCIETY PROCEEDINGS.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY.

SEVENTH ANNUAL MEETING.

Held in New York, May 23, 24, and 25, 1901.

(Continued from page 309.)

A Year's Experience in the Treatment of Stricture of the Eustachian Tube by Means of the Electro Bougie.

Dr. Thomas J. Harris, of New York City, read this paper, based on an experience of the past year, with 33 cases. Each case had been carefully tested with the tuning fork. In the majority of cases a silver catheter wound with thin rubber had been used, and a current of not more than 3 ma. had generally been used. The current was not increased as soon as there was any bubbling in the ear, and the negative application of the current was not continued for more than five minutes. Inflation was not practiced afterward. Of the 33 cases, 24 had tinnitus of a chronic nature, and of this number, one was cured, 13 were improved and 12 were not improved. Only 13 complained of difficulty in hearing, and of these, 12 were improved. In only two cases out of 25, in which strictures were present, was the tinnitus cured permanently. The strictures were successfully passed in all but one case. Eight out of 17 cases showed material improvement in hearing. He was convinced that the electrical current, even when properly used, was capable of causing adhesions of the tube, and, according to his experience, the effect of the current in relaxing the stricture was not permanent. In spite of aseptic precautions, suppuration of the ear had followed in three instances. One case was mentioned in which electrolysis had caused sudden and severe pain, followed within a few days by suppuration of the ear, and extension into the mastoid. Evidently in this case there was a short tube. This case served to show that the method of electrolysis was not free from danger. The author concluded that this treatment should be used after, and not

before, other methods, and that it was questionable if these strictures were really fibrous.

Dr. George L. Richards, of Fall River, Mass., said that it was important not to use inflation immediately after the use of the bougie. He had done this once, and had been unfortunate enough to blow some air into the tissues around the Eustachian tube. As to the patient's sensations he could speak from personal experience. He had had the Eustachian tube catheterized before the days of cocaine, and had also submitted to Eustachian electrolysis in the hands of Dr. J. A. Kenefick. The operation had not been painful, and after three or four minutes there had been a sensation as though something had given way, and as though air had entered the tympanic cavity—a sensation which he had never experienced in the previous catheterizations.

Dr. Wendell C. Phillips, of New York City, said that he had watched Dr. Harris' work in his clinic with great interest. His own experience with the method corresponded exactly with that described in the paper. He believed it was a useful method of treating strictures of the Eustachian tube, but it was not a cure-all, and he did not believe the electricity had any permanent effect on the stricture as applied in these cases. He was inclined to agree with a recent statement of Dr. Dench, that the results were just what one would expect to achieve by the use of any bougie, with or without electricity. There was, however, one slight advantage, i. e., it was an easy mode of passing through the stricture, because of the temporary relaxation caused by the electric current. The speaker said that some years ago he had suffered from very severe tinnitus in the right ear. At that time Dr. Dench had passed in an ordinary bougie with entire and permanent relief of the tinnitus. Tinnitus was certainly very much relieved by electrolysis of the Eustachian tube. As to the case of mastoid involvement reported in the paper, he believed the explanation of this complication was to be found in the supposition that they had not waited long enough after the attack of grip for the bacilli to disappear. There was some danger of these bougies breaking, as shown by this accident having occurred even in experienced hands.

Dr. N. L. Wilson said that his limited experience confirmed most that had been said by Dr. Phillips. However, he had had one case in which he had been unable to introduce the ordinary bougie, and yet the electro-bougie had passed readily. Having passed the stricture with this instrument, he was accustomed to

use an ordinary bougie to complete the work. He also had experienced the introduction of the electro-bougie, and had found it quite painful.

Dr. G. B. McAuliffe, of New York City, stated that the action was not truly electrolytic, but a tonic one on the muscular and vascular portions of the tube, that the difference in the amount of bubbling depended on the amount of moisture present in the tube; that it was not practicable to melt a stricture without substituting another scar surface. He asked if the electrolytic action had ever been done under sight, on the surface of the body.

Dr. W. P. Brandegee, of New York City, said that this method had proved to be thoroughly practical. In cases at the New York Eye and Ear Infirmary, he had noticed a distinct and permanent result in nearly every case. The cases had gone around to various clinics complaining of tinnitus and deafness, and had not received benefit until subjected to this treatment. They had not stopped to theorize, but they did know that the tinnitus had been greatly diminished, and the hearing markedly increased. The tactile sensation conveyed to the operator in the passage of the electro-bougie, should be sufficient to warn him when he has reached the tympanum. The stricture was often not met until one reached the mouth of the tympanic cavity. In the last two or three years they had used the bougie in over 150 cases, and in not a single one had there been suppuration. The instruments had all been carefully boiled. He was not aware that he had ever made a false passage, and thought there was much more danger of such an occurrence with the ordinary bougie because of the force used.

Dr. C. Dunbar Roy, of Atlanta, Ga., said that for the past thirteen months he had been using electrolysis of the Eustachian tube, and had been impressed with the part played by the personal equation. In the first few months he had had rather poor results; in the last four months the results had been far better. He believed the Eustachian bougie was most useful in selected cases of tinnitus and deafness. He had employed it entirely in private practice, and had obtained far better results than by any other method. He used the chloride of silver battery and five milliamperes of current. He never used anything but a solid silver catheter that he could bend to fit the nasopharynx and make enter the tube. With a hard rubber catheter he never felt sure of the direction and location of the instrument. In some cases he had obtained excellent results with a whalebone bougie, but when this failed he re-

sorted to the electro-bougie. The amount of pain attendant upon the treatment varied considerably in different individuals. He had never observed any infection or any irritation of the drum. In his ten cases the results had been most satisfactory.

Dr. D. S. Dougherty, of New York City, spoke by invitation. He said that some years ago he had been deeply interested in the relief of urethral stricture by electrolysis. At that time he had collated about 200 cases. The permanent cures amounted to 12 per cent, and in these he believed the good result was not from the electrolysis, but from the bougie, just as from an ordinary bougie. In cases in which the stricture was temporarily impassable he always succeeded in passing the electro-bougie.

Dr. J. A. Kennefick, of New York City, said that the condition of the tube could be determined in most cases by the use of the otoscope under inflation. When the obstruction was situated near the tympanic orifice, one was apt to be misled by the sound striking this obstruction instead of the drum. He would like to ask Dr. Harris whether in the case in which an adhesion was afterward found at the mouth of the tube the catheter used was metallic. If the tip of the metallic catheter were not properly insulated, some action was likely to take place at the entrance to the tube. At the tympanic cavity considerable obstruction might be met with until the current was turned on. In an experience of nearly three years with over 100 cases, he had never had suppuration or any other untoward results. The sensation of freedom imparted to the bougie indicated to him when the bougie had entered the tympanic cavity. Again, the facial expression of the patient changes the moment the bougie enters this cavity, this region being much more sensitive than the tube. In some cases it was necessary to employ the treatment two or three times before overcoming the obstruction.

Dr. Arthur B. Duel, of New York City, said that a paper like the one under discussion must always prove useful because of the careful and faithful analysis of the cases presented. He had himself never advocated this mode of treatment as a cure-all. In every case of catarrhal otitis media at some stage the Eustachian tube would become obstructed, and there would result tinnitus, deafness, and perhaps also vertigo. The one thing to be accomplished in such cases was the ventilation of the tympanum by the opening of the Eustachian tube. Although Dr. Harris' one year's experience had led him to speak of the method in a somewhat det-

rimental way, it should be remembered that other speakers had given a much more favorable report on the method, founded upon an experience of from three to five years. A permanent opening up of the Eustachian tube could be accomplished much more quickly by this method than by any other. It was not a mechanical effect, as was the case with ordinary bougies.

Dr. Edward B. Dench, of New York City, said that if electrolysis of the Eustachian tube had accomplished nothing more than elicit this discussion it had certainly done a good deal for otology. He agreed pretty well with Dr. Harris in what he had said. He believed the method was perfectly safe, if practiced according to the principles of aseptic surgery. He had used the ordinary bougie in grip cases, and had had suppuration. The choice of the instrument must vary with the individual operator. When he could not get the ordinary instrument through, he would use the electrolytic method; until then he perhaps would not try it. He had had these obstructions recur after the use of the simple bougie, and had seen cases recur after the prolonged use of the electro-bougie. A very slight difference in the curve given to the bougie would explain the varying difficulty experienced on different days in passing the instrument. Air might get through, and yet the instrument would not take the abrupt turn. Again, on certain days the mucous membrane of the tube would be more swollen than on others, and that, too, in certain portions of the tube. Mention was made of a case of partial occlusion of the external auditory meatus, in which dilatation by electrolysis had been tried after division with a knife. Although the conditions seemed favorable, and the operation could be actually witnessed, electrolysis had accomplished nothing.

Dr. N. H. Pierce, of Chicago, called attention to the fact, that the mucous membrane lining the Eustachian tube is not smooth, but is in folds, and that there may also be more or less obstruction from adenoid tissue. Strictures occur most frequently at the isthmus. In the future work in this field it was most important to make a careful diagnosis. In stapes ankylosis, or in various conditions of the middle ear, electrolysis of the Eustachian tube could not do good.

Dr. T. P. Berens said that in unskilled hands electrolysis of the Eustachian tube was a dangerous and formidable procedure. The cases most benefited by it had been those strictured in a small part of the tube only.

Dr. Harris, in closing the discussion, said that he believed the metal bougie was used in the case in which adhesion was found at the mouth of the tube. In every case a celluloid bougie had been passed before trying electrolysis. In the hands of competent persons, thoroughly acquainted with the technique, the method was probably free from danger, but under other circumstances it certainly was not free from risk.

NEW YORK ACADEMY OF MEDICINE,

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Stated Meeting, Dec. 18, 1901.

R. C. MYLES, M. D., Chairman, pro tem.

Tubercular Ulceration of the Epiglottis.

DR. A. B. DUEL, presented for Dr. W. K. Simpson, through the kindness of Dr. Field, a man who had had tuberculosis for about two years. For the past three or four months he had been quite hoarse, and ten days ago, because of intense dyspnea, it had been necessary to perform tracheotomy. Examination showed extensive induration of the epiglottis. No anesthetic had been used.

DR. E. MAYER said he thought the element of danger in these cases of tracheotomy lay in the giving of a general anesthetic. The records would probably be much better if general anesthesia were not employed.

DR. W. FREUDENTHAL said that he understood the tracheotomy had been demanded because of the enlargement of the epiglottis, but it did not seem to him that the enlargement was so great as to have required it.

DR. R. C. MYLES said that in performing tracheotomy in this class of cases his experience had been that sensation was partly obtunded and that if a little of a 4 per cent solution of cocaine was used hypodermically the operation would be practically painless. As the knife entered the trachea there would be a sudden movement, and on expression of pain or irritation, but this was of advantage, as it favored the ejection of blood from the trachea.

Tubercular Glands About Trachea.

DR. J. F. MC. KERNON reported the case of a young girl of fifteen who, a few months ago, had developed an enlargement about the right side of the larynx. A diagnosis had been made of an enlarged gland, and external applications had been used, with the result that the skin had ulcerated and a sinus had formed, which passed into the gland. When seen by him, there was a foul dis-

charge from the wound down to the level of the second ring of the trachea. The mass extended down over the anterior part of the trachea. The discharge had been examined before the operation, and tubercle bacilli found. An incision was made along the line of the trachea on the right side, and the gland removed. In the larger portion it measured $3\frac{1}{4}$ of an inch by $1\frac{3}{4}$ inches, and there was also a projection under the trachea, $1\frac{1}{4}$ inches in length. The mass consisted of true tubercular tissue. Several small glands were removed. Primary union took place, and only a linear scar was left. Several physicians, skilled in physical diagnosis, had examined the girl's chest, and had failed to find any evidence of tuberculosis.

A Case of Double Frontal Sinus Disease.

DR. R. C. MYLES presented this case. The patient had been operated upon three times. The first two operations had temporarily improved the patient, but there had been frequent attacks of intense pain with swelling of the face, and then a discharge of pus through the fistula that had been left. She had had several attacks of haematemesis, which had interfered with the treatment of the sinus. Under general anesthesia two weeks ago he had done the double operation, and had found two separate pockets of pus, one situated $1\frac{5}{8}$ inches, and the other $1\frac{3}{8}$ inches from the centre line. On passing in the curette, grumous pus and gas and tissue escaped. After thorough curetting the pockets were packed. It was necessary to remove the bone rather high, this patient having a very small nasofrontal canal. This canal had become occluded for more than an inch. He had passed a steel probe through the center axis of the place for the canal, and then drilled on the anterior side toward the face. He used a trephine and a dentist's chisel for enlarging the artificial canal. A good part of the nasal process of the superior maxilla was removed, and then as large a tube as he could procure was inserted. The tubes he used could be readily removed, even after having been in position a long time, because by pulling on them they became elongated and smaller. Although made of soft rubber, these tubes did not become especially offensive. He expected a good result from this last operation. He had seen several cases in which a depression had been left, and hence he had made a special effort to avoid the production of such a deformity in this case, and intended to insert the gold plate, which he had presented in connection with the case.

DR. T. J. HARRIS said that this case suggested to him some of the cases reported by Professor Kuhnt. His operation consisted in a complete obliteration of the anterior wall and closing of the wound at once without packing, leaving only a small opening at the inner end of the horizontal incision for the introduction of a drainage tube. His idea was that after having established drainage into the nose there was great danger of infection. He maintained that on an average of from three to six weeks the whole sinus filled in with granulation tissue, and that the primary depression, which formed after the operation, was obliterated. Of course, the mucous membrane was curetted away most thoroughly. Last summer Dr. Harris had operated upon a case belonging to Dr. Hubbard, and had removed a large portion of the anterior wall, and very little deformity had resulted. Healing had taken place in about four weeks.

DR. FRANCIS J. QUINLAN said that he could corroborate what had been said by the last speaker. About two years ago he had presented to this Section a man in whom he had removed the entire anterior walls of both sinuses. Within six weeks the cavity had been filled up with a mass of tissue almost as hard as bone. In the four cases operated upon since that time he had done in each instance almost as radical an operation and had excellent results, afterwards curetting gently and packing lightly. The cases in which he had used the tube before this last series had not done so well as the cases reported by Dr. Myles. Sometimes by using a little gauze and gradually diminishing the size of packing, an osseous mass would in time fill up the cavity of the frontal sinuses. If he had a case of very extensive empyema of these sinuses he would not hesitate to pack it as before and almost entirely disregard drainage through the nostrils. He thought these cases were very apt to become reinfected by capillary action caused by the gauze wick or rubber tube.

DR. T. PASSMORE BERENS said that no distinction had been made between the cases in which the sinus had been filled up with granulation tissue, or where necrosis was extensive, and those in which the membrane was only slightly hyperaemic. When the mucous membrane was fairly healthy and one could hope by packing to secure good healing of the membrane, if one established nasal drainage one would re-establish largely the function of the frontal sinus. In the extreme cases in which the infundibulum and

bone walls were broken down and necrotic, and there was much granulation tissue, or the mucous membrane was extensively diseased or destroyed, it was necessary to curette out all the diseased tissues whether this meant total occlusion or not. A case was mentioned in which the sinus had filled up solidly as in Dr. Quinlan's case, without deformity or discharge.

Cicatricial Stenosis of the Pharynx.

DR. J. J. CONCANON presented a woman who had come to the clinic about two weeks ago. She was thirty-five years old, considerably emaciated—having dropped from 126 to 85 pounds—breathed with noisy hissing inspiration, and articulated so feebly that it was difficult to distinguish her words. For two months she had been able to swallow only liquid foods, and was becoming very weak.

The pharyngeal tissues were replaced by a cicatrix attached anteriorly to the hard palate above and to the base of the tongue below, where the funnel-shaped pharynx ended in a small ring, in which the epiglottis was imprisoned, almost filling the narrow opening that communicated with the larynx and esophagus. The velum palati had been destroyed. There was a rigid-edged opening about half an inch in diameter, through which muco-pus flowed from the rhino-pharynx. The cartilaginous nasal septum has also disappeared. Externally, there was a long, thick scar on the side of the neck, which had followed an abscess occurring at the age of five years.

Otherwise she had been healthy until ten years ago, when there was throat trouble; the voice being at first partly, and finally, entirely lost. After a year the voice returned, but hoarseness and aphonia recurred. She had been under treatment at hospitals here for five years, during which time dyspnea and dysphagia gradually increased until her condition became alarming. She was then taken to Heidelberg, and was there immediately placed upon large doses of iodide of potassium. She could swallow only liquids at this time and was unable to speak, breathing with great difficulty. Dilatation by means of bougies was kept up daily for six months, when she returned here feeling quite well and able to speak, breathe and swallow freely. She was instructed to use a large-sized bougie once a week, but had neglected to do so. However, she experienced no difficulty until the beginning of the present attack, two or three months ago. She has found it necessary to continue tak-

ing the iodide in doses of ten grains three times a day, for a few weeks at a time, at irregular intervals.

The woman is married, and it is interesting to note that, notwithstanding the evidently syphilitic condition—the original ulceration having been undoubtedly the result of hereditary syphilis—she has had five children, all of whom are living, and, she says, strong and healthy. Her sister has suffered since childhood from interstitial keratitis.

Dr. Emil Mayer, he had just learned, had treated the patient when she was a child; it would be of interest to hear from him what the condition of the case was at that time.

Bougies were now being used, No. 13 having been introduced at the last visit. Increasing doses of the iodide are being taken. The patient is now able to swallow small quantities of solid food, and is feeling much better.

Dr. E. Mayer said he remembered this patient very well because of the dreadful symptoms which she had presented of what had appeared to be hereditary syphilis. The pharyngeal wall was extensively diseased, and there was an opening into the esophagus not larger than a dime. Dilatation had been practised and she had remained abroad about three years. He had seen her only once or twice since that time. He did not think there was any reason to question the specific history. There was even now an apparently gumatous condition, and her sister had suffered from interstitial keratitis. Both here and abroad she had received large doses of iodide.

Dr. T. P. Berens said that he was under the impression that parents who had been under prolonged and active specific treatment might give birth to children not exhibiting evidence of the disease.

Dr. M. D. Lederman said that he had seen three similar cases and did not take such a pessimistic view of them as the last speaker. These cases certainly improved under the massage with the Schroetter tube. When there was much cicatricial tissue he was not in favor of an intralaryngeal cutting operation, because the secondary contraction would probably do much harm. Iodide could hardly be expected to do much good when there was much cicatricial tissue and no evidence of active disease.

There is an element of danger in the use of a solid bougie, as we cut off the air supply in introducing such an instrument in a contracted glottis. The opening in the Schroetter tube does away with that objection.

DR. MYLES spoke of a case which had shown no improvement under small doses of iodide, but had been quickly cured by large doses. This woman had borne a perfectly healthy daughter. It was ascertained that twenty years before her first husband had had syphilis.

Tubercular Laryngitis.

DR. F. J. QUINLAN presented a man having on one side of the larynx an infiltration resembling a prolapse of the ventricle. Closer inspection, however, suggested either a new growth or a tubercular infection. He gives a history of huskiness which had been steadily increasing for eight or nine months. There was an elevation of temperature of three-quarters of a degree with a slight increase in the pulse rate and respirations. The sputum had not yet been examined, but it was expected that it would confirm the provisional diagnosis of tubercular laryngitis.

A Case For Diagnosis.

DR. T. J. HARRIS presented a young man who had had hoarseness for about one year, and had been under his observation for over six months. There was a clear history of syphilis, and there were distinct signs of consolidation at the apex of the right lung with some rales. So far as he knew there had been no elevation of temperature, but at present there was a slight increase in the frequency of the pulse. One year ago tubercle bacilli had been found in the sputum. The condition had not changed during the six months. There was no cough, no pain and little or no expectoration. He had received the iodides in moderate doses for only a fortnight, and since then he had been given injections of creosote. The case was presented for diagnosis because of the possibility of a mixed infection.

DR. QUINLAN said that he had examined this patient, and thought the appearance presented was strongly indicative of syphilis. He saw a great many such cases in his service in the City Hospital. Often there was no distinct evidence of syphilis until a tubercular infection caused a depression of the general health and then the syphilis would reassert itself. A thorough test should be made of antisyphilitic treatment in this case.

DR. MYLES said that there appeared to be some masses of tissue in the larynx of this patient which were rather old. The appearance of the larynx suggested tuberculosis, and his well nourished condition was not at all against such a diagnosis.

DR. G. B. McAULIFFE thought the temperature was given too much prominence in connection with the diagnosis of tuberculosis in this case. He had seen dry cavities pronounced tubercular, yet there was no elevation of temperature simply because there was no septicaemia present.

DR. ARTHUR B. DUEL presented a man 25 years of age, a conductor, whose family history was very good. With the exception of an attack of malaria fourteen years ago he had always enjoyed good health. There was no history or evidence of syphilis. He was married and the father of three healthy children, and his wife had had no miscarriages. Six months ago he had begun to have trouble with his nose, and he was told by a physician that he had "dry catarrh." He came to the Manhattan Hospital in October because of a complete obstruction of the right side of the nose. Examination showed occlusion by a mass apparently springing from the middle turbinal. There was a history of occasional nose-bleeds. A large mass of this tissue was removed. This caused quite free hemorrhage. The man returned within three days with the nostril filled with the same tissue. He was not seen again for a week, and during this time a probe was passed down through the caniculus into the nose by an ophthalmologist. This seemed to aggravate the difficulty. Owing to an unfortunate confusion of records of the pathologist of the hospital, there was some doubt about the diagnosis, but there was reason to believe that the pathologist found it to be an epithelioma. He would like to ask regarding the propriety of a course of iodide, in such a case where no evidence of syphilis could be obtained. There seemed to be a general inclination to give iodide of potash in such cases in hope that it might give relief.

DR. MAYER said that from the appearance of the growth and its prompt recurrence, the prognosis must be considered very bad. He recalled a similar case occurring in a girl of seventeen. She died in a short time. Large doses of iodide would do no harm, and there was a bare possibility that the diagnosis might be erroneous, hence he would suggest beginning with 15 grains, three times a day, and increasing it up to the point of tolerance. The case reminded him of one seen at his office about six weeks ago. There was the same bulging over the lachrymal sac, and on pressure pus exuded. The middle turbinate was removed, and the most offensive pus evacuated from behind this body. It was not probable,

however, that such a condition would be found in the case under discussion.

DR. HARRIS said that his examination of this case had suggested very strongly malignancy. Last spring he had presented to this Section a case which the pathologist had diagnosed as melanoma, yet most of those present had refused to accept the diagnosis of malignancy. It might be interesting to know that this patient was still under observation, and that there was no evidence of malignancy. One should not rely too much upon the microscope and ignore the clinical appearances.

DR. M. D. LEDERMAN said that about five years ago he had presented a case before this Section which proved to be one of small, round cell sarcoma. He had removed a portion of the growth with a cold snare, and had caused severe hemorrhage. The growth had quickly recurred. The diagnosis was made by the microscope. Small pieces of growth were blown out of the nose at times by the patient. The case shown this evening gave a similar history. Growths of a malignant nature bleed quite readily on being touched with a probe. The extension of the process seems to be more rapid in the nose and naso-pharynx than elsewhere in the body. In the case of sarcoma, the disease extended to the rhinopharynx, and filled the upper portion of the space. Double ligation of the external carotids was performed by Dr. Dawbarn before excision of the maxillary bone on the right side was attempted.

Cutting off the blood supply in the above manner temporarily arrested the growth of the tumor for about three months, during which time, the size of the tumor diminished considerably.

It began to get larger, however, and the major operation was performed with a good result. The patient was alive three years after the operation, wearing an artificial jaw, and at that time, no return of the disease.

DR. MYLES spoke of a case of epithelioma of the antrum of Highmore which had presented a rather similar bulging. The mass was removed along with a portion of the antral wall. The patient lived about one year. In this case the microscopical examination had repeatedly given the correct diagnosis. According to his experience, syphilis, sarcoma and certain forms of chronic inflammation of the ethmoid would produce polypi. In most doubtful cases he was accustomed to send specimens to three or four pathologists for independent examination and report.

LARYNGOLOGICAL SOCIETY OF LONDON.

SIXTY-EIGHTH ORDINARY MEETING.

November 1, 1901.

E. CRESSWELL BABER, M. B., President, in the Chair.

Report of the Morbid Growths Committee was read:

Case of Tertiary Syphilitic Laryngeal Stenosis Treated by Laryngofissure Without Tracheotomy (Re-Exhibited).

Shown by Mr. W. G. Spencer. The patient, a potter, was operated upon in March, 1899, for severe dyspnea, not relieved by large doses of iodide of potassium and mercury.

Tough, irregular masses of inflammatory sclerosed tissue covered the ventricular bands and partly the vocal cords, which, however, moved fairly, and the cartilaginous framework was not involved. Much of the obstructing tissue was excised, including part of the right vocal cord. The patient has remained well and at work, breathing freely as well by night as by day. He has a hoarse but thoroughly audible voice. The inflammatory hypertrophy of the cord on one side now crosses the middle line so as to meet the remaining portion of the excised cord. When exhibited, soon after recovery, the opinion of the meeting was strongly in favor of tracheotomy for such cases, and it was thought that this patient would soon require it (see Vol. VII, page 62).

The case shows that tracheotomy is not always best, but that in selected cases, especially where the cartilages are not involved, success is to be obtained by thyrotomy and excision.

The President congratulated Mr. Spencer on the successful result obtained, for there was no contraction of the wound in this case. The man had a very fair amount of voice and was certainly 'more comfortable than he would have been if he had had tracheotomy performed.

Mr. P. De Santi said that the case he had intended to show was of the same nature as Mr. Spencer's, but was one where tracheotomy had been performed, and the man's life was a burden to him. He was unable to do any work, and ready to have any operation whatever done so long as he could get rid of the in-

convenience caused by the tracheotomy tube. If tracheotomy could have been avoided with a result equally as good as in Mr. Spencer's case, it would have been a great advantage to the patient.

Dr. Herbert Tilley said that the case referred to by Mr. de Santi had recently been operated on by the speaker at the Golden Square Hospital. The patient was very anxious to dispense with the tube, and laryngoscopic appearances seemed to indicate that if the left ventricular band and vocal cord were removed sufficient room would be provided for natural respiration. Thyrotomy was performed, but it was found that the cicatricial tissue extended below the larynx and was particularly marked in the cricoid region. Hence little good could be expected from removal of the left vocal cord and ventricular band.

Mr. W. G. Spencer said the Germans had been trying grafting skin and turning the flap in as a means of checking the stenosis. Perhaps Dr. Tilley and other members would try this flap method. It had apparently been attended with some success, especially as regards getting rid of the tracheotomy tube.

An account of some cases in which this operation had been performed would be found in the *Centralblatt für Chirurgie*.

Two Molar Teeth Showing Healthy Crowns, but Evidences of Caries in the Palatal Root—In Each Case There Existed an Empyema of the Corresponding Antrum.

Shown by Dr. Herbert Tilley, who pointed out that although the crown of a tooth might appear healthy it did not prove that the roots were not diseased and the cause of antral suppuration; hence in a given case of antral suppuration the healthy aspect of the corresponding molar teeth should not at once lead to the inference that such an empyema was due to intranasal causes. If the patient experienced pain or discomfort in a tooth, which was coincident with an increase of the antral symptoms, such a tooth should be regarded with suspicion, no matter how healthy its crown might appear.

In one of the cases referred to, the abscess around the palatal root had free access to the antrum; in the second, a small abscess was situated in the recess at the root of the fangs.

Mr. Parker asked Dr. Tilley whether there were any signs of pyorrhea alveolaris, because otherwise he did not see how caries and suppuration could occur at the roots of the teeth, unless

it was secondary to the sinus disease. The only conditions which could account for it would be either ordinary caries proceeding from without inwards, or else pyorrhea, and if there was no pyorrhea in these cases he should look upon the caries of the fangs as being secondary to, rather than the cause of, sinus suppuration.

Mr. Waggett wished to say in contradistinction to the previous speaker that Tomes, in his "Dental Surgery" (Ed. iv, page 389), points out that one may meet with necrosis of the pulp without any external wound of the tooth whatever, an abscess forming from pus escaping through the apex of the fang.

Mr. Nourse was of opinion that there was a small area of caries on the crown of one of the teeth.

Mr. Westmacott said that this question of an apparently sound tooth with an abscess at the root had recently come under his consideration in the case of a doctor, who had, when he first saw him, antral suppuration on the right side. Apparently the set of teeth on that side was perfect. He noticed a symptom which to him was new, and he had not found any confirmation of it elsewhere. By trans-illumination with a strong lamp in the right side of the mouth, the first molar was opaque, the other teeth being perfectly transparent. From the experience of a previous case he came to the conclusion that the first molar was "dead," and advised its removal. An abscess was found at the apex of the palatine root leading into the antrum, and which was apparently the cause of the empyema. The same thing had, within the past month, been again brought to his notice in the case of a gentleman who applied to him with marked irritation at the front of the hard palate. Nothing could be found to account for this until, by means of trans-illumination, it was discovered that the right central incisor was opaque. On removing it, an abscess was found at the root of the tooth. After extraction all the symptoms disappeared.

Dr. St. Clair Thomson said he had just been reading an old book—Spencer Watson's book on "Diseases of the Nose," and found the following on page 161: "It may happen that the teeth are all apparently sound, and yet one of them may be the cause of the purulent collection within the antrum in consequence of the death of the fang, the symptoms of which are not by any means easily detected. The skilful dentist, however, is sometimes able to get information on this point by striking the crowns of the teeth in succession with a metallic rod until one of them is found to be more sensitive than the rest, and he then proceeds to test the

condition of the pulp cavity of the suspected tooth. * * *” Dr. Thomson was sorry that they could not consult with dentists on this subject, because he had had cases in which the patients had insisted on having certain teeth extracted, which were found to have diseased fangs when there was nothing to be detected in the crown. He could not say whether in these cases the tooth was the cause, or whether it was secondarily infected. He believed he had read that the Rontgen rays were being used for the purpose of detecting diseased roots of teeth. He did not know if any member had come across this in the literature on the subject, or if anyone skilled in dentistry could tell them about the procedure.

Case of Laryngeal Syphilis With Fixation of Left Vocal Cord.

Shown by Dr. Donelan. The patient, a man age 52, had contracted syphilis sixteen years previously. Three weeks ago there was a large foul ulcer occupying the left side of the larynx and involving the left arytenoid, vocal cord, ary-epiglottic ligament, and extending past the middle line on the posterior surface of the epiglottis with several unhealthy granulations. There was complete fixation of the left vocal cord. There had been remarkable improvement under antisyphilitic treatment so far, but in view of the unilateral character of the affection, and the existing appearances, he desired the opinion of members as to whether there was not malignant disease as well.

Mr. Spencer thought the antisyphilitic treatment might be continued for some time, as it looked likely to be successful.

Man, Aged 33, shown at the Meeting in April Last (vide ‘Proc.,’ p. 104) With Chronic Laryngitis and an Ulcer on One Vocal Cord. Now Seen to Present Marked Lupus Infiltration and Ulceration of the Epiglottis.

Shown by Dr. St. Clair Thomson. This patient has now complained of hoarseness and a constant desire to clear his throat for about a year. When shown to the Society six months ago the author raised the question as to the ulcer on one cord and the general thickening and congestion of both cords being due to tubercle, but he abandoned it in the absence of any confirmatory signs, and also because some purulent rhinitis was thought to be a sufficient explanation of the condition. Several members expressed their opinion that it was only a case of simple laryngitis, and some even thought that the man’s hoarseness was to a great extent functional.

On June 1 last it was noticed that no ulcer was visible on the cords, which were simply thickened, catarrhal, with granulations along their attached border. For the first time the epiglottis was then noticed to be red, velvety, and infiltrated with slight vertical fissures (? commencing ulceration) on its laryngeal surface. He did not come under observation again until October 20, when the epiglottis presented the condition which may now be observed. It has lost much of its contour, being thickened, red, congested-looking, and with marked loss of substance and tubercular infiltration of the floor of the ulcers. There is no marked dysphagia. The voice remains hoarse and painful.

The President asked whether there were any symptoms or history of syphilis in this case, and also whether tubercle bacilli had been found.

Dr. Jobson Horne did not know why it should be regarded as a case of lupus. To him, it seemed a fairly straightforward case of tuberculous disease.

Dr. St. Clair Thomson said, in reply to the President, that there was no distinct history of syphilis in this case. He had been put on ten grains of iodide of potassium, but it had made him rather worse; this, of course, tended to confirm the suspicion of tuberculosis. There was a great clinical difference between tuberculosis and lupus in the larynx, a point which he had previously raised before the Society. He thought this distinction assumed its greatest importance in regard to the question of treatment, because if this was a case of lupus of the epiglottis, it was a form of disease most amenable to treatment; but if it was a tuberculous epiglottis, it was one of the most malignant of laryngeal affections.

Case of (?) Congenital Fenestration of the Anterior Pillars of the Fauces.

Shown by Dr. E. Waggett. The case was a well-marked example, occurring in a woman aged 43, of the condition of which several instances had been exhibited at meetings during the past year. History of ulceration was completely wanting, but the patient had scarlet fever at an early age.

Dr. Clifford Beale said that considerable interest was attached to this case, in association with cases previously shown to the Society, because the question was raised whether such fenestration could be due to scarlet fever. It struck him at the time that there was not very much evidence generally forthcoming to

show that scarlet fever was followed by such fenestration. Since then he had looked up the literature of the subject and seen what the authorities had to say in this matter. The result was that he found several recent editions of present text-books had quoted from one another, and that finally the quotations came from one source—a paper by Goodall, in 1894, recording a short series of cases where there was definite fenestration after scarlet fever. No one else appeared to have brought forward such cases. He had the personal evidence of physicians at the fever hospitals to the effect that it is almost outside their experience to meet with palatal fenestration after scarlet fever. One physician had told him that he had come across one case where perforation had followed, but otherwise he had never seen it. That is to say, although ulcers of the soft palate follow scarlatina—they are, indeed, fairly common—they do not usually end in fenestration, but in recovery.

Dr. Donelan referred to the recent literature of this subject, particularly to the cases of Monro, of Glasgow, and Koenig, of Paris, as showing that perforations of this kind were liable to be due to so many varieties of infection that the question whether a given case was congenital or otherwise was attended by increasing difficulty. In Monro's case, which appeared in the October number of the "Glasgow Medical Journal," the bacteriological evidence appeared to show clearly that the erosive action was due to the pneumococcus.

Dr. Fitzgerald Powell thought that there was very little doubt that this was a case of perforation resulting from ulceration. The openings, it would be observed, were certainly surrounded by bands of white cicatricial tissue, which showed that there had been ulceration, whether scarlatinal or not in origin he could not say.

Some time ago he showed a case of malformation of the fauces, which he thought was due to development causes, and which looked much more like it than the present case, but the general opinion was, on that occasion, that it was due to scarlatinal ulceration.

He thought Mr. Waggett had, on previous occasions, shown cases which confirmed this opinion.

Mr. Waggett, in answer, agreed that Dr. Powell in thinking that scarring was present, and that the condition was probably, in this case, due to ulceration.

Case of Growth (Probably Papilloma), on the Left Vocal Cord in a Man Aged 32, a Porter by Occupation.

Shown by Dr. Fitzgerald Powell. The patient stated that in February this year he began to suffer from hoarseness and difficulty in singing, which had gradually got worse. There had been no pain or dyspnea. On examination, an irregular sessile growth is seen arising from the anterior three-fourths of the left vocal cord. It is nearly white in color and shows slight papillary projections on the surface. The growth is most probably a papilloma, containing some fibrous tissue. It is interesting to note in these cases of benign neoplasms of the larynx arising from the cords, even when of considerable size, the slight amount of interference with the breathing in adults.

Dr. Clifford Beale asked whether a papilloma of such a very white color was not very uncommon? He suggested that such an excellent case should be recorded by means of a colored drawing.

Dr. Law wished to point out that the late Dr. Whistler showed a case to the Society some years ago in which the growth was even much whiter than the present one.

The President remarked on the whiteness of the growth.

Case of Epithelioma of the Epiglottis in a Man Aged 58.

Shown by Dr. Dundas Grant.

Mr. Butlin said he believed Dr. Grant did not so much raise the question of diagnosis as that of operative interference, and from that point of view he would not regard the case as a favorable one. He had never operated on a case in a similar condition to this, and he was doubtful as to which was the best way of exposing the growth. Seeing that the man had a gland on the right side and that the gland was movable, he thought it would be best to cut down on it and make an extensive incision on the right side, getting to the base of the tongue and epiglottis, and then to make a thorough examination. At Dr. Grant's request he had put his finger down onto the back of the tongue as far as the epiglottis, which was very hard. The base of the tongue was also indurated, but not to the extent he had anticipated, taking into consideration the visible thickening. There seemed to be little infiltration. Those cases that one saw, not very uncommonly, of malignant disease in front of the epiglottis spreading along the base of the tongue and backwards into the epiglottis, he had never yet ventured to attack

by operation, the disease was so deep-seated and extensive; but he had often thought that he would expose the growth from the outside when a suitable case came before him, although he doubted whether it would be successful. Here he would expose the growth from the side and remove the glands at the same time, if he were going to operate from the outside.

Dr. Lambert Lack agreed that the case was quite unsuitable for operation. Not only the larynx but so much of the adjacent parts of the anterior wall of the pharynx and tongue would have to be removed that it would be quite impossible to close the wound. In early cases of epithelioma spreading from the tongue to the epiglottis, it was sometimes possible to remove the disease without removing the larynx, and in these cases he had seen very good results.

Case of (?) Tubercular Disease of the Epiglottis.

Shown by Mr. H. M. Ramsay. The patient, a girl age 19, an envelope sorter, complains of cough and hoarseness. She states that she was quite well till eight months ago, when she noticed an alteration in her voice, and began to be troubled by a cough. On examination, she has extensive thickening and lumpiness of the epiglottis and ary-epiglottidean folds. It is difficult to see the cords, but they seem to be very little affected and to move freely. The patient has no pain. The chest is normal, and no tubercle bacilli have been found in the sputum. The case is shown with a view to diagnosis.

Dr. St. Clair Thomson thought this case was, clinically, a very typical example of lupus. There was the greatest difference between that and tuberculosis of the same extent in the larynx. If this girl had no mischief in her lungs, it was one of the most favorable cases for local treatment, and it was quite possible to make a cure of it. He had recently seen such a case, in which the disease, apparently quite as extensive as in this girl, was completely arrested by the use of the galvano-cautery in one of his colleague's hands. He mentioned this because he had heard in the Society many expressions of opinion against the use of the galvano-cautery in the larynx. The case he referred to was one of extensive lupus, not only of the epiglottis, but also of the ary-epiglottic folds, and treatment with the cautery resulted in complete arrest.

Mr. Butlin said that with regard to the use of the galvano-cautery in the larynx, a well-marked case of lupus was once handed

over to him. The patient was in the hospital. He applied the cautery very freely indeed, and in the end succeeded in getting the disease cured. But he was bound to admit that on one occasion the patient nearly died, and certainly would have died had he not instantly performed tracheotomy in the ward. Anybody who was going to apply the cautery in the larynx in the case of lupus unaided should be prepared for such a contingency.

Case of Laryngeal Swelling.

Shown by Dr. Bond. The patient, a boy age 14, has had a peculiar voice since infancy. On the left side the cord is marked by a swelling, especially in front and low down, red in color, slightly granular and moving with phonation. Occasionally a small portion of base of cord can be seen. The boy is unable to obtain work because of his peculiar voice. Suggestions as to treatment of the condition will be welcomed.

Dr. Law would suggest as a possible, but very improbable, explanation of the condition, the impaction of a foreign body. He remembered when he was house surgeon at Golden Square a patient coming to the hospital for four or five months presenting a very similar appearance in the larynx to this patient. He heard a year or two afterwards that a piece of rabbit bone was one day extracted which had not been visible during the previous year's observation.

PROF. H. STEINBRUEGGE.

Professor Steinbruegge, of Giessen, died after a long illness at the age of seventy years. At first he was a general practitioner, but later, on account of his health, he devoted himself to otology and in this work he became a collaborator of the deceased Prof. Moos, of Heidelberg.

From 1877 to 1885 the two published in collaboration in the *Zeitschrift fur Ohrenheilkunde*, a series of articles on the histology and pathology of the ear. Among these are to be found researches upon injuries to the labyrinth, also upon bilateral absence of the labyrinth in deaf mutes, and the degeneration of the acoustic nerve.

In 1885 Steinbruegge was made Docent at Giessen and 1887 Professor Extraordinary, a title which was not made official until 1898.

At Giessen, Steinbruegge published an Atlas on the Human Labyrinthine Vestibule, a monograph on the pathology and anatomy of the organ of hearing, which was made part of Orth's "Treatise on Anatomy and Pathology," and the chapter on Histology of the Labyrinth and the Acoustic Nerve in the Schwartz's "Treatise on Otology."

SAN FRANCISCO SOCIETY OF EYE, EAR, NOSE AND
THROAT SURGEONS.

Meeting, October 17, 1901.

F. B. EATON, M. D., President, in the Chair.

Dr. J. H. Philip presented a case of, and read a paper on

Recurrent Fibroma of the Naso-Pharynx,

and also exhibited specimens.

(This paper appears in full in this issue of the Laryngoscope.)

Dr. Payne:—The specimen shown this evening is certainly exceedingly interesting, but particularly the case of Recurrent Fibroma of the Naso-Pharynx. I have lately had a couple of cases of fibroma, that is myxo-fibroma of the naso-pharynx; very large ones. One where the tumor hung from the roof of the palatine vault down over the pharynx, and on over the epiglottis—tremendously long. In one of the cases the tumor was quite soft, but the pathologist's report gave it as a myxo-fibroma. If these tumors are pure, that is, pure fibromata of the naso-pharynx, and completely removed, so that the mucous membrane may heal over the cut surface, it would seem that there should not be any recurrence. If they do recur there is certainly some other element in the tumor than simple fibroma tissue.

Dr. Powers:—I did not hear what the age of that particular patient was, Doctor?

Dr. Philip:—The boy from whom the fibroma was taken was 16 years, and the one from whom the myxo-fibroma was taken was nine years old.

Dr. Powers:—This is all very interesting, it seems to me—Fibroma particularly in a boy of perhaps 16 years of age. I have not myself had the pleasure of seeing one for a number of years. I had one very marked case a good many years ago, in a boy who came to me at the age of 15, I think, or 16, with his nostril entirely filled; a most exaggerated frog face, with the tumor extending and filling the palatine vault, pressing the soft palate away forward. It was early in the day of those cases—we had not heard of many of them at that time. I removed with the knife large portions

with considerable hemorrhage, and then got Dr. Taylor to work with me on it, and we had to cut a slit in several directions in order to get at it. We cut the soft palate and found a prolongation from the interior in front of the zygoma. A large tumor had formed there. We had to make an external incision, and took off the outer portion. The other portions were quite largely within the scope of the nasal forceps. There were several recurrences, but they were not allowed to go on to any great extent, and gradually the recurrence came with less frequency, and at last, by the time the young fellow was 20 years old, or thereabouts, the trouble seemed to cease, and I did not hear anything further from him for a number of years—I think in the vicinity of ten years, when I happened to hear his mother was within reach of the post-office, and I wrote to her asking how he was. She replied he had never had any trouble since, was married, had several children, was getting on very well in the world, and was absolutely free from any of these developments, and seemed to corroborate, so far, the proposition that these growths tend to cease if the life can be preserved until the age of 21 to 22.

Dr. Philip (closing the discussion):—In reading up the literature on the subject, I saw distinctly stated in several places that if it was a fibroma pure and simple, no matter how thorough the extirpation might be, there was a tendency to recurrence up to 20 years, even in the cases where they split the soft palate and chiseled away the hard palate. This growth, if you were to feel of it, you would find perfectly dense. I broke, as I told you, I think four wires, and it was only by dint of good luck that we got it at all. Some one has asked me why I did not use the cautery to remove this, and I would state that it was almost impossible to get behind the growth. I formed a loop of wire and passed it through the nostrils down to the naso-pharynx, and then pulled it out of the mouth by a string, but we had great difficulty in pulling the loop up behind the growth, and so I apprehend that with a more flexible wire it would have been almost impossible. The case was presented to-night simply to show you how rapidly these growths will return. This was removed on the 20th of June, and now we have the first of October; those of you who saw it noticed that it was coming back rapidly, and that it is changing its color somewhat, getting darker. And I would state also that as far as the diagnosis of the character of the growth is concerned, it was, of course, not made by myself, but by my pathologist who stands pretty high in

the city. He said it was composed almost entirely of white fibrous tissue.

Dr. W. A. Martin presented a case of
Tumor of the Nasal Septum.

Dr. Martin:—I have two cases here. The first I showed you is without special interest. Just a perforation of the lens, with a long lead pencil point, which shows a peculiar formation of cataract, being a pyramidal cataract, with the base located at the posterior capsule, there is nothing else of special interest. The other case, however, is especially interesting. He came into my office the day of our last meeting, which was on the 26th of September. At that time I tried to induce him to come around, but missed connection, so we did not have a chance to see him here. When I examined him he had a button-shaped tumor, probably as large as my thumb nail, on the triangular cartilage in the right nostril. On palpation it was quite hard, and seemed to be very poorly supplied with blood vessels, with a whitish appearance that gave me the impression at once of sarcoma. I have already had two sarcomas of the nasal septum, one of which I operated with numerous recurrences. The other escaped, I do not know where he went.

Thinking that I had a sarcoma, the next day, Friday, I cut it off and sent it to a pathologist for confirmation of my diagnosis. In pushing the knife up I found that the tumor lapped over the edges like a mushroom, that I could get the knife under the edges. I had no trouble in shaving it off, and I noticed it left a white surface about one-third the size of the tumor itself. I thought at first that this was simply the pedicle of the tumor, but when I used a probe I found it was brittle, and that I could dig the cartilage out with the end of the probe. When he came back again there was a distinct membrane formed around the point of extirpation of the tumor like a diphtheritic membrane, which I could separate with the probe, leaving a bleeding surface. I was a little absent-minded, and did not save that membrane. When he again returned it had spread a little further. This membrane could be easily removed, leaving the cartilage exposed. Over the cartilage there was no bleeding surface, but there was around the edges a little. That membrane I also neglected to examine. But I painted it with a four per cent solution of formalin, thinking I had a diphtheritic membrane to deal with.

Then that same afternoon I got a report from Dr. Montgomery, in which he said that he was not able to determine the character

of the tumor, that it had some of the characteristics of sarcoma, and some appearance of epithelioma, but the general appearance would lead him to decide that it was either a granuloma or an inflammatory tumor. However, two days later, I took a piece of the membrane that was still forming there, particularly over the site of the original growth, it was quite thick, as you saw it to-night, and sent it to Dr. Ryfkogel. I told him to examine particularly for diphtheritic bacilli, and streptococci. His report came back two days later that the only germ he could find was the staphylococcus pyogenus aureus, and he said that he never knew it to form a membrane. At present the membrane is still there, and that is the only germ found in it. You can lift it up, and the cartilage is still soft and crumbling, and you can dig it out with the probe. I have not been helped out by an examination of the tumor or by an examination of the membrane, and I am still on the fence whether I have a malignant growth there or not. If you will notice the cartilage is broken away, there is nothing left there but the mucous membrane of the other nostril, covered over by this false membrane, and you can dig that membrane right off.

Dr. Montgomery was unable to state positively what it was from his examination. I was unable to elicit any history of syphilis, but have been keeping him on twenty grain doses of iodide of potassium, three times daily. It has not the microscopical appearance of a gumma.

Dr. Frederick:—I had a case in which the appearance was very similar to that which Dr. Martin describes, in a man of about 33 or 34. The tumor when I first saw it, was pretty far back at the junction of the middle and posterior thirds of the septum, and I removed it at the time, but did not take the pains of having a careful examination made. The tumor has since then recurred, and the pathologist's report of a piece removed two or three weeks ago, would place it amongst the granulomata.

Dr. Payne:—I would like to add this, that the case is exceedingly interesting, but since nothing definite can be made out of it at the present time, I hope Dr. Martin will keep track of it, and give us a final report later.

Meeting of Dec. 5, 1901.

DR. F. B. EATON, President, in the Chair.

The paper of the evening, entitled

The Use of Camphoroxol and Menthoxol in Suppuration of the Middle Ear,

was read by Dr. A. E. Phelan. Following is an abstract:

All are familiar with Menthoxol and Camphoroxol. These remedies contain, as their active ingredient, a three per cent solution of peroxide of hydrogen, combined with menthol, camphor and alcohol. It is supposed the hydrogen is liberated upon contact with the pus, leaving the menthol and the camphor in solution with the alcohol. They are non-irritating and quite stable. Samples were furnished Dr. Phelan in the early part of the year, and on account of the very favorable reports given by Prof. Wetter of Koenigsberg, he decided to give them a trial.

The first case in which he tried it was that of a girl, aged eight years, suffering from a chronic purulent discharge from the left ear, dating from an attack of measles three years before. The membrana tympani was almost completely destroyed, the discharge quite copious and very fetid. No pain or tenderness over the mastoid. She had been under Dr. Phelan's care for four months, the usual remedies being used with very slight improvement. The parents strongly objected to an operation, and were willing that he should continue the treatment. In February he began the use of camphoroxol, instilling a ten per cent solution into the ear after it had been cleansed. In about ten days the discharge became less fetid in character, and diminished in quantity. The improvement continued for weeks, and Dr. Phelan began to hope for favorable results, when the patient took a severe cold, developing the well-marked symptoms of mastoiditis. Dr. Phelan operated on the mastoid two days later with favorable results.

The second case was a young lady, aged 18, who came under Dr. Phelan's care. March 10th, suffering from suppuration of the left ear, with mastoid symptoms. There was a large perforation of the membrane tympani, and exuberant granulation tissue over the internal wall of the middle ear. The discharge was fetid, and tinged with blood. There was marked tenderness over the mastoid. The granulations were removed by curetting, and the parts thoroughly swabbed with pure camphoroxol. The mastoid was painted with a strong tincture of iodine. The ear was irrigated ev-

ery four hours with boracic acid solution, and a ten per cent solution of camphoroxol instilled into the ear immediately after. The pain and tenderness began to diminish in twenty-four hours, in two weeks only a slight tenderness remained, and the discharge had greatly diminished. A few days later there was a recurrence of all the symptoms, with great pain over the mastoid. The middle ear was swabbed with a saturated solution of bichromate of potash, and the same treatment continued. The unfavorable symptoms gradually disappeared, and the patient made a complete recovery in four weeks.

The next case was that of a man aged 70, suffering from a neglected purulent discharge from the right ear. Admitted to the hospital August 13th. Upon examination found meatus partially filled with granulations, which were removed by the curette. The drum membrane was partially destroyed. The ear was irrigated with one-sixtieth solution of carbolic acid and a ten per cent solution of camphoroxol instilled into the ear three times a day for a week, and then reduced to twice daily. The discharge gradually lessened, and he was discharged cured in three weeks.

The next case was a lady 60 years of age, suffering from acute purulent otitis media, with a large perforation of the membrana tympani at the lower posterior quadrant. The ear was irrigated twice daily, with a boracic acid solution, and a ten per cent solution of camphoroxol instilled into the ear. Complete cessation of the discharge in two weeks.

Probably the most interesting case of them all was that of a young lady, aged 22, who consulted Dr. Phelan June 5th for an inflammation of the left ear of three weeks' duration. She had been under treatment during that time, and an operation had been strongly advised. There was a fair opening in the posterior upper segment of the membrana tympani, and a fetid discharge. Great pain and tenderness over the mastoid, and one degree of fever. The family was strongly opposed to an operation, and Dr. Phelan decided to try the oxols for a day or two.

After thoroughly irrigating the ear with a boracic solution, a 50 per cent solution of camphoroxol was instilled into the ear and allowed to remain a couple of minutes each time. An ice bag was applied over the mastoid, and the ear irrigated every three hours with boracic solution, and a 20 per cent solution of camphoroxol dropped into the ear immediately after. In twelve hours a decided improvement was noticed in all the symptoms, and the ice bag was

discontinued in 48 hours. The time was gradually lengthened between the treatments. Three weeks after, the ear was treated twice daily with a 10 per cent solution. In three months the discharge had ceased, and the opening in the drum membrane closed. There remained considerable tinnitus, which, after a month's treatment by inflation, every other day, entirely disappeared. The hearing was greatly improved, a watch being heard distinctly at five inches. In all these cases the oxols were continued for a few days after the discharge had ceased.

Dr. Phelan found that many patients would stand a 50 per cent solution without pain, while others would complain of a severe burning sensation, lasting but a few minutes, where a 10 per cent solution was used. A fresh solution of the required strength should be prepared each day, and it is believed that these remedies are worthy of a further trial, and that by their judicious use in chronic otorrhea an operation may sometimes be avoided. Dr. Phelan also stated that he had tried them in quite a number of similar cases, two dozen or more, he thought, and they were all highly satisfactory. These cases that he had cited he had had under observation ever since, and there has been no return of the discharge.

Dr. Powers:—I would like to say that I have used these oxols to a slight extent, more on the nose than on the ear. I have used them in a few cases of purulent ear trouble with some satisfaction, but I have not followed the matter up as Dr. Phelan has. It seemed to me that they were quite beneficial in some nasal troubles with purulent conditions. I have seemed to find a very decided improvement from their use, especially the camphoroxol. I use the camphoroxol almost entirely. I used the methoxol first, but did not like it as well as the other oxol.

Dr. W. A. Martin:—I would like to ask if that (the camphoroxol) effervesces as much as the other?

Dr. Phelan:—Just about the same.

Dr. Martin:—I have been opposed radically to the use of peroxide of hydrogen in the ear for the last four or five years. Pretty nearly the only trouble I ever experienced was from the use of these peroxides. Several times I have had a decided mastoid tenderness which I thought was due to the use of these peroxides, and for that reason I have been slow to take up the camphoroxol and the menthoxol, although I have seen very favorable reports in the journals from them; but, judging from the time that it has taken to

cure these cases that Dr. Phelan has reported, I do not know that he gets any better results than I have succeeded in getting with the ordinary remedies. While it is a satisfaction to know that they are successful in the treatment of these cases, still we have other remedies that are equally as good. However, as I say, I would not denounce the use of the remedies without understanding fully what the combined action of this, I might say, peroxide treatment, would be, but I would be very unwilling to use anything that would fizz up like peroxide in the ear.

Dr. Payne:—I would like to ask Dr. Phelan how much time has elapsed since the treatment of the majority of the cases.

Dr. Phelan:—I think the last case that I cited has been three months. And the other case of mastoid symptoms has been nearly five months, I think.

The President:—Doctor, I would like to ask you if you have had any experience in using these oxols in sub-acute or acute cases?

Dr. Phelan:—Yes.

The President:—Do you find them effectual?

Dr. Phelan:—I have had very effectual results.

The President:—Do you dilute them?

Dr. Phelan:—Yes, there is only a three per cent solution of peroxide of hydrogen in it, and I dilute it so that I have a 10 per cent solution. I tried it in an acute case about three weeks ago, and the case was cured in about ten days or a week.

The President:—I asked the question because I have tried menthoxol in a case passing from the acute into the chronic stage, and I found it rather irritating.

Dr. Phelan:—I tried menthoxol at first, and I was not well pleased with it, as I was with camphoroxol, so I have discarded that and have not used it for six months, I think.

Dr. A. B. McKee:—In regard to cases of chronic suppuration, I think that our success depends a great deal upon the class of cases which we chance to meet. I thought at one time that chronic suppuration was a satisfactory thing to treat. I had a series of cases which grew better. Suppuration ceased, and they were practically cured with the ordinary methods of treatment. I grew to believe that simple cleansing of the ear, and the use of a mild solution of nitrate of silver was almost a panacea. Then I stumbled on to a case which had been treated by a number of others, and the case would not yield to this remedy. I had others of the

same character, and nothing that I could do would make any difference in those cases. They did not have mastoid symptoms, and they were not much trouble, other than they had a certain amount of suppuration, which rendered it necessary for them to be in the hands of the doctor. Those cases all proved to have somewhat of a cholesteatomatous character, as the operation afterwards showed, and it seems to me that where this condition prevails, and none of these remedies can be of avail, that we could always use them to make a definite diagnosis. In some of these cases there would be no difficulty in making the diagnosis, but in others there was nothing, perhaps, other than the peculiar pallor of the labyrinth wall, which suggested the trouble. It would certainly be a very valuable thing if we could find any remedy that had a special value in these chronic suppurations. I tried for some time the method used by Lucas. He claimed that 1-1,000th solution of formalin used precisely and regularly in these cases, had very much reduced the number of his mastoid operations, and chronic suppurations. I did not find in my cases that it made a particle of difference, and for awhile I had so much difficulty with cases, and I had a number of operations for chronic suppurations, that I began to think I had altogether forgotten how to use the remedy. And I have not nearly as much faith in my ability to cure chronic suppurations as I once had.

The President stated that he would like to hear from Dr. Martin with regard to his case of septum trouble reported at the last meeting.

Dr. Martin:—There were features about that case that puzzled me, and the microscopic report gave nothing.

When the man came to me, I put him on twenty grains of iodine three times a day. Under that treatment the tumor healed very nicely, and I discharged him and told him to keep on using it, but he did not have the bottle refilled. He came back to me two weeks later with a most beautiful crop of mucous plaques. Besides that, he had a roseola all over the skin, so that while the history was very indefinite, the symptoms were very definite. At the same time, it does not explain the peculiar character that the tumor in the nose assumed. If you remember, I told you I sent it to Dr. Montgomery for analysis. He did not diagnose it as a malignant neoplasm, or as a gumma, but thought it had the characteristics of an inflammatory tumor; that it had some features that would indicate sarcoma, and some that might indicate epithelioma. As I understand it, a gumma is a tertiary symptom, and plaques and roseola are the secondary, and the thing had rather reversed itself. So that if we should accept this as a gumma, we would have to consider that the disease had reversed itself as far as the symptoms are concerned, which, of course, is impossible.

The President:—Was it not the beginning of a gumma?

Dr. Martin:—Well, it was a growth similar to a gumma, but the chances are it was not.

CHICAGO LARYNGOLOGICAL AND CLIMATOLOGICAL SOCIETY.

Meeting held Nov. 19, 1901.

Reported by WM. L. BALLENGER, M. D.

Dr. H. M. Thomas reported a case of secondary hemorrhage following tonsillotomy with Mathieu's tonsillotome. The patient was an adult. He had taken unusual precautions to prevent hemorrhage, as the tonsils were fibrous and large. Forty-eight hours after the first tonsil had been removed, the second was taken out. On the following morning hemorrhage set in from the one first removed. In other words, after an interval of 72 hours there was secondary hemorrhage. The hemorrhage spurt was synchronous with the heart beats. Hemorrhage ceased after the application of a tonsil compressor for two hours.

Dr. Gradle reported a case of venous hemorrhage, following the use of the hot snare, three days after operation.

Dr. Freer was called to see a case of hemorrhage, following cautery dissection. The hemorrhage lasted for eight hours, and was finally checked with a cotton tampon and tannic acid powder. He believes the use of the cold wire snare the safest method of operating.

Dr. Ballenger said that during the past year he has used Peter's (cold wire) snare a number of times, and found violent reaction in a number of cases, one case being laid up for two weeks. The wound is ragged and well adapted for infection, which probably explains the violence of the reaction. Precautions were taken before and after the operation to prevent infection. He had also had some primary hemorrhage by this method, but in no case had there been secondary hemorrhage. Thus far tonsillotomy by this method had proven a disappointment in a number of cases, while in others it had given excellent results. In one recent case the wire had broken four times in the removal of one tonsil.

Dr. Holinger uses Kilian's method, (a) pulling out the hilus or supra tonsilar tissue with a hook, (b) slitting the crypts and (c) painting them with acetic acid. This causes the tonsil to shrink.

Dr. Pierce has had severe hemorrhage by Kilian's method, and does not find the favorable results reported by Holinger.

Dr. Casselberry has had a half dozen cases of serious tonsillar hemorrhage in both adults and children. He says hemorrhage will happen by any method of operating. He also believes that a hemorrhage that will yield to chemical astringents will, if left alone, cease spontaneously. He advises swabbing the tonsil free of blood clots and ascertaining the exact point of spurting, and then using the actual cautery to check it. He also uses a long artery forceps to catch up the bleeding point.

Dr. O. J. Stein reported a case of hoarseness in a man, aged 50 years. There was slight pain in the throat. Temperature normal, with considerable cough. Expectoration free, white and frothy, never yellow. There is an ulcer on the posterior half of the left vocal cord, with considerable induration on the under surface of the cord. He was operated on last February for a tubercular portion of the intestines. Patient had had rancorous voice for many years. There were no physical findings on examining the lungs until quite recently. Appetite good. Pulse not rapid. Has lost slightly in weight. Has night sweats. Family history good. No tubercle bacilli in sputum. The patient is improving under anti-syphilitic treatment. The character of the ulcer and the absence of infiltration of the arytenoid cartilages are against tubercular laryngitis, while the other symptoms point to tuberculosis. The ulcer may be a mixed tubercular and syphilitic expression.

Dr. Stein also reported a case of leukoplakia in a man 54 years old, the lesion being chiefly limited to the mucosa of the left cheek. There is a thickened hornified patch the size of a finger nail, which is opalescent in appearance. Microscopic examination showed tissue quite like epithelioma. Treatment with analine oil was not attended by improvement, the disease shows signs of spreading.

Dr. George E. Shambaugh reported a case of latent sinusitis. Exhibited same case two years ago. Suppuration within the nose followed an attack of typhoid fever. Polypi were removed several times. Pus discharged mostly into the throat. General health poor. Had chills and fever. Post-nasal space and pharynx dry. Right frontal region tender on percussion. Frontal and maxillary sinuses washed out through natural openings, and showed pus to be present. Phenoid also involved.

Patient appeared again a few months ago; pharynx not dry, headaches gone, and there was no discharge. A plug of pus was washed from the frontal sinus; fetid pus came from maxillary sinus. There is still some pus present, as shown in the irrigations. It is

a typical case of latent sinusitis. When she catches cold the active symptoms return. Pus accumulates during the night and gushes out on sitting up.

The treatment consisted of the removal of polypi and the removal of the anterior end of the middle turbinated body, together with irrigations.

The X-ray may be used to demonstrate whether the irrigation canula is in the frontal sinus (exhibits skiagraph) or in the anterior ethmoidal cells.

Dr. Dickerman spoke of the difficulty in making a correct diagnosis in latent cases. He had made sections of 50 heads and found the infundibulum in 50 per cent of the cases leads into the anterior ethmoidal cells. Hence it is impossible in one-half of the cases to catheterize the frontal sinuses.

Dr. Freer asked as to the location of the opening into the frontal sinus, i. e., as to its point of exit into the middle meatus.

Dr. Shambaugh (closing):—The opening in this case is not in the infundibulum, but in front. Transillumination two months ago showed a slight shadow over right sinus. There is none now. Irrigation carried on by seven feet of pressure.

Dr. T. M. Hardie exhibited a case of unusual fracture of the septum occurring last August. There was a wound in the left alae nasi. At this point there is a firm fibrous or indurated swelling which may be keloid.

Dr. Dickerman saw the case before Dr. Hardie, and thought the tumor was filled with fluid, but on puncturing it found it to be composed of firm tissue. His next thought was that it was a turning in of the lateral cartilages of the nose.

Dr. Holinger said he thought it was a case of keloid.

Dr. Meige exhibited sections of normal tonsils removed from a young man, aged 24 years. They extended beyond the pillars of the fauces, and were not adherent. Never had sore throat. The lymph masses were regular in shape, and there was but slight fibrous connective tissue surrounding them. The epithelial lining was regular and intact. The size of the excised portion of the tonsil was about three-fourths of an inch by one-third of an inch.

Note.—It is probably incorrect to call the tonsils normal, as they were much enlarged or hypertrophied. The usual signs of repeated attacks of inflammation, as fibrous tissue, were absent.

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The fourth edition of this comprehensive volume adheres closely to the original plan and scope, to present, within a moderate compass, such an account of the symptoms and treatment of diseases of the nose and pharynx as might be useful to the general practitioner and senior student. In this it serves an excellent purpose.

The Medical News Pocket Formulary, New (fourth) Edition. Containing 1,700 prescriptions representing the latest and most approved methods of administering remedial agents. By E. QUIN THORNTON, M. D., Demonstrator of Therapeutics, Pharmacy and Materia in the Jefferson Medical College, Philadelphia. New (fourth) edition, carefully revised to date of issue. In one wallet-shaped volume, strongly bound in leather, with pocket and pencil. Price, \$1.50, net. Lea Brothers & Co., Philadelphia and New York, 1902.

Always acceptable and containing many new formulae, among which may be mentioned the use of hydrogen peroxide in the obliteration of powder stains, that of urea in the treatment of lupus, the local application of guaiacol in promoting the absorption of serous exudates, the use of adrenalin as a hemostatic, of chloretone and orthoform as local anesthetics, the newer tannic acid compounds, the organic compounds of silver and of arsenic as substitutes for the more poisonous inorganic salts of those metals, etc.

Progressive Medicine, Vol. IV., 1901. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M. D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Octavo, handsomely bound in cloth, 400 pages, 13 illustrations. Per annum, in four cloth-bound volumes, \$10.00. Lea Brothers & Co., Philadelphia and New York.

Contains no special chapters on laryngology or otology.

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THE NOSE AND THROAT IN THE HISTORY OF MEDICINE.

BY JONATHAN WRIGHT, M.D., BROOKLYN, N. Y.

(Continued from page 28.)

THE RESULTS OF THE RENAISSANCE.—Continued.

We now note the first great advance in the technique, since the first mention of the operation. Although others, as Casserius and Fabricius, had declared that cut cartilages healed kindly and easily, division of them was always avoided. Juncker*, in 1721, said of bronchotomy, that some advised the ring to be cut, which allowed more convenient placing of the tube, but he thought this renders the healing more difficult, and he advised that it should only be done for foreign bodies, in which case many rings may be cut. A little before this time, Heister† apparently first advised the division of the rings as a routine practice. He speaks of tracheotomy in the "Bräune," and for resuscitation of the drowned. Platner‡ in 1758 approved of bronchotomy, when necessary, in angina, and says it is safe to cut the cartilaginous rings. He did not approve of paracentesis. Vic d'Azyr§ in 1776 communicated, to the Royal Society of Medicine of Paris, his reflections on the possibility of laryngotomy between the thyroid and cricoid cartilages.

The Modern
Operation.

According to Sprengel, Desault was the first who practiced laryngotomy, splitting up the thyroid cartilage in an individual in the larynx of whom a foreign body had lodged. While Desault

Laryngotomy.

* *Conspectus Chirurgiæ*, p. 665.

† *Chirurgie*, L. 1718.

‡ *Institutiones Chirurgiæ*, 1758.

§ *Hist. de la Soc. Royale de Med.*, 1776.

Tracheotomy
in Diphthe-
ria.

urged the propriety of such a procedure in cases of this kind, I find no record of the fact that he performed it, in any of the many editions the great Bichat issued of his works. We have noted a similar suggestion in Juncker, in regard to the tracheal rings. Pelletan* records a case, operated on in 1788, in which he did a laryngotomy, dividing the thyroid cartilage in order to push down into the esophagus a foreign body arrested at that point. The man recovered but remained hoarse, and according to Pelletan such will always be the case when the incision includes the larynx. In another case (Obs. IV) in 1805 he divided the cricoid cartilage alone. Holmes attributes the origin of the modern tracheotomy tube to A. G. Richter, who published his *Obs. Chirurg.* in 1776.

From what has preceded it is evident, I think, that many of the cases in which tracheotomy had been done, were suffering from diphtheria, but when Bretonneau wrote his great treatise† he cited from Borsieri the report of an operation, as the first instance in which it was clearly evident that the obstruction to breathing, for which it was done, was due to croupous laryngitis. It was performed by André, a skillful London surgeon, in 1782, upon a five-year-old boy, who recovered in fifteen days.‡

INTRA-NASAL SURGERY AND PATHOLOGY OF THE SEVENTEENTH AND EIGHTEENTH CENTURIES.

Operations for
Nasal
Polypi.

We will now turn our attention to that part of intra-nasal surgery which has always occupied, to some extent, the activities of medical men—the removal of nasal polypi. We have seen the skillful procedures of Hippocrates. We have seen the barbarous modifications of them by Paulus and the Arabians with their knotted strings and little saws. Velpeau,§ who gives a very much fuller account of the ancient history of this subject than I can find room for here, refers to a procedure I have not elsewhere met with in my reading. He says that William of Salicet proposed the gradual dilatation of the anterior openings of the nostrils with a sponge, or some other device, to render avulsion of nasal polypi easier of execution. The knotted strings of horse hair and of silk were soon abandoned after the Renaissance, and in 1571 Aranzi or Arantius, in giving an account of his method of dealing with nasal polypi, describes not only a for-

* *Clinique Chirurgicale* T. I. P. I. Edit. 1810. Obs. 7.

† *Traité la Diphtheria*, 1826.

‡ The reader is referred to the treatise of Sanné on Diphtheria, to Gurlt's History of Surgery, and to Louis "Sur la Bronchotomie" (l. c.) for a fuller account of the operation.

§ "Nouveaux Elements de Médecine Operat.," T. III, p. 595, 1839.

ceps with long jaws he had invented for the purpose, but he gives still more interesting details of his way of illuminating the anterior nares.* He speaks of the difficulty of blood obstructing the view in the use of the knife, and to obviate this he constructed his long forceps. He obtained illumination by placing the patient in a darkened room and making a hole through a wooden shutter to admit the ray of light, which was to fall directly into the nasal cavity, which he rendered more patent by raising the end of the nose. On cloudy days he used artificial light, magnified by a water bottle.

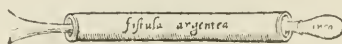
Remembering that in the sixteenth century not only were the Greek medical works more faithfully translated into Latin, but that they were more widely read in the original, we may easily conjecture that Fallopius† drew his idea of the wire snare for nasal polypi from the works of Hippocrates, but it differed very much from the devices the latter employed, and it is in very fact the modern nasal snare of Jarvis, without the wheel, of which all others at present in use are modifications. By Fallopius' reference to nasal hemorrhoids we also perceive he was familiar with the Arabian pathology, but he makes a distinction between them and ordinary polypi, practically much as we now do more exactly. The hemorrhoids were our vascular hypertrophies, and the polypi were our edematous growths, the former being noted far back in the nose (posterior parts of the inferior turbinated bones?), and the latter being situated in more accessible regions, as a rule. For the cure of the anterior growths he used the ligature, leaving it around the growth for two or three days, when it would fall off with the constricted mass. This method he did not apply to hemorrhoids or "carunculæ" in the back part of the nose. He says: "But when the polypus is well within the nose it is difficult to use the ligature, which should encircle the roots of the polyp." He mentions the forceps operation of Paulus and continues: "But I take a silver tube which is neither too broad nor too narrow, and then a brass or steel wire, sufficiently thick, preferably the iron wire from which *harpsichords* are made. This doubled I place in the tube so that from this wire a loop is made at one end of the tube, by which, used in the nares, I remove the polyp. When the polyp is engaged in the loop, I push the tube to the root of the polyp, and then pull on the metal threads sticking out at the lower part of the tube, and thus I constrict the roots of the polyp and ex-

* "Julii Cæsaris Arantii, De Tumoribus Secundum Locos Affectos," p. 172.

† "Institutiones Anatomicæ," 1600; "De Tumoribus Narium," p. 296.

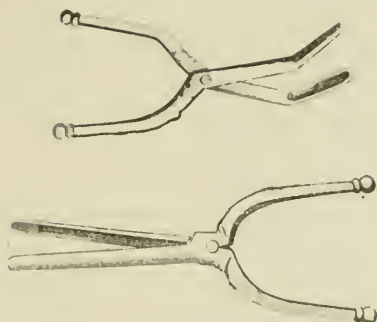
Fallopius' tractate *De Tumoribus præter Naturam* was first published 1573, and the publication of his snare dates back to that, but he died in 1562.

tract it, since by this wire loop the root of the polyp is cut because it is a soft substance." Harder growths he pulled down so that he could cut off the roots with a knife.



Fallopius' Nasal Snare.

Fallopius praised his instrument as very efficacious, and he used it also for polypi of the rectum. He condemns strongly the use of a cautery through a speculum, regarding the practice as dangerous. He also speaks of the string sawing method, which he had never used. His is the first improvement on the method of Hippocrates in removing nasal polypi. Fallopius died in 1562, two years before his much admired preceptor, Vesalius. The description of his snare was not published for many years after his death. Rhinologists cannot fail to be struck with the appearance, at such an early date, of what is practically a modern instrument. For some reason the advantages of the steel wire were not appreciated, and the instrument was not destined to come into use until it had been reinvented after the development of other adjuvants of intranasal surgery. Many snares and devices for tying ligatures around polypi were subsequently invented, but without the elastic steel wire they were little, if any, superior to the intra-nasal forceps. These latter, though used by Aranzi and even by earlier operators, came into favor principally through the advocacy of Fabricius ab Acquapendente. Gurlt speaks of Dalechamps, a French surgeon of about the same period, using an instrument similar to Aranzi's, but Paré knew no better treatment for polypi than local applications and the cautery. The forceps invented by Fabricius were really scissors curved at the end. There were many modifications of them. Thus John Van Horne (1621-1770) added teeth to their points to seize the polyp with.



Fabricius' Forceps for Nasal Polypi.

Thomas Bartholinus relates to a fatal case of hemorrhage from their use, although Fabricius had boasted they were entirely safe (*tutissimum*).

Riolan* (1577-1657), in his works, illustrates the general practice in regard to intra-nasal surgery of this kind, which we may see was inferior to either the procedures of Fallopius, or of Fabricius, for the removal of polypi. He mentions five methods: 1. Astringent, and other local applications of drugs. 2. The operation of Celsus and Galen—cutting with a flat-pointed probe and burning the roots with a cautery. 3. When coming down behind the palate, pull it down with the forceps and cut it off. 4. It may be burned, or 5, cut off with horse hair in the manner recommended by Mesua.

Glandorp, in whose tractate† published in 1628, full references will be found to previous literature, apparently was ignorant of Fallopius' instrument, for his own device was greatly inferior to it, though it, unlike the earlier and better snare, was adopted and modified by many subsequent operators. It was a sort of a hook, a shank with a curved end and an eye at the point, through which a waxed silk thread was to be passed. A knot being firmly tied and the thread twisted, the polyp was thus ligated until upon the ninth day it would fall away. Fabricius Hildanus used a seton in the nose, and tried to get rid of the polyp by suppuration. More than 200 years after Fallopius' death, Levret published, in 1771‡, a most elaborate and exhaustive treatise, containing accounts of the

* Opera Omnia: Morbi Narium.

† Tractatus de polypo narium, etc.

‡ Observations sur la cure radicale de plusieurs polypes de la Matrice, de la gorge, et du nez.

most ingenious and complicated instruments for the ligation and extraction of polypi. Notwithstanding their ingenuity, they seem utterly worthless viewed from a modern standpoint.

Much more practical and efficient, it would seem to us, were the instruments of Benjamin Bell.* Although Heymann asserts that the first mention of Belloc's sound is to be noted in the work of Deschamps in 1805, a similar instrument is to be found described in Bell's work. He figures different forms of snares and forceps for removing nasal polypi. The best of the former is perhaps a double canula, in each tube of which the end of a pliable wire was to be inserted and drawn through, leaving a loop at the end. The double canula was then, after adjustment to the polyp, revolved in the nose, which, twisting the wire, constricted the polyp. The apparatus was then left in the nose, tightened at intervals, until after a few days the growth came away. Some of the operations performed with forceps were of the most atrocious nature. For the details of a revolting operation for *polypus nasi*, I commend the reader to descriptions in Le Drans works.†

After failure of evulsive methods, he used a seton saturated with some medicament of a styptic nature.

Percival Pott,‡ who mentions the wire snare, declares he has seen the septum and pieces of the palate pulled away by the forceps and other evulsive methods. He believed there were many polypi which, though not malignant, should be left alone on account of the impossibility of a successful operation. He denied with scorn the efficacy of escharotics and setons. Mann, according to Cloquet§, and Petit, and according to Garengéot||, first split the soft palate for the extirpation of a post-nasal polyp.

The Pathogenesis of Nasal Polypi.

Some account may now be given as to the ideas in regard to the etiology and pathology of the nasal polyp. A singular conception of the etiology and pathogenesis of the polyp, in *præ-Schneiderian* days, may be found in Forestus. In spite of the monstrous error of conception, we may perhaps recognize the germ of the idea which subsequently became the accepted one until the rise of the *Myxoma* mistake in the last half of the nineteenth century. Forestus, writing in the last years of the sixteenth century, mentions (l. c.) the remarkable case of a woman

* "System of Surgery" (first edit., 1784), Am. edit. 1791, Vol. III, p. 42 seq.

† "Traité des Operations de Chirurgie," 1742; "Observations de Chirurgie," 1731.

‡ "Chirurgical Observations," 1775.

§ Osphresiology.

|| "Traité des Operations," T. 3, p. 52 obs. V. Edit. 1731. Garengéot does not state which of several French writers before him of this name he refers to.

in whose nostrils a huge polyp had grown "due to her carrying heavy weights on her head; it forced the mucus down into the membranes of the nose." She was cured by ligation of the polyp and the application to its stump of vitriol; but when she resumed her occupation, it again returned and was again cured in the same way.

Previous to the eighteenth century nasal polypus was still a very comprehensive term, and Van Meckren* even gave that name to a piece of wood, covered by granulations, which was expelled from the nose of a patient he was treating by local application†.

Passing over a hundred years from Forestus, and beyond the advent of the Schneiderian anatomy, we find the idea modified by Saint Hilaire.‡ "The *polypus*. When this excrescence is hard and is not pendent they call it sarcoma; which is a great round tumor, which has not a root like the polypus; moreover, sarcoma always commences at the lower part of the nostrils, and the polyp takes its origin in the osseous lamellæ at the root of the nose. In order to well understand the cause of this excrescence, it is necessary to observe that the internal membrane of the nose is very thick and spongy, and is bathed in a sticky viscid humor, and its porosities are so arranged that it only gives passage to those parts of the blood which are the thickest and most likely to produce excrescences. All these causes joined together contribute greatly to the generation of polyp. Whenever a little heat and disturbance get into the blood, its movement increases, its viscid parts are extruded, the heat fixes them and condenses them, and their abundance in a part as spongy as the nose, furnishes the substance of the polyp, because these humors becoming arrested in the tissue of this membrane, they swell its vessels and dilate its glands; the matters congeal, and are changed into a fungous and carcinomatous mass and, by the addition of new matter, the polyp enlarges and grows. The polyp indeed may also be engendered by an acrid lymph, which erodes the glands and the channels of the internal membrane of the nose in such a manner that the nutrient juice, becoming infiltrated by the ulceration of this membrane into the interstices of its fibres, coagulates there and forms, little by little, those excrescences which they call polypi. One may again attribute the cause of these excrescences to the little glands

* "Observationes Medicæ Chirurgicæ." In Latinum translatae ab Blasio, 1662.

† The earliest account of a rhinolith I have noted is by Thos. Bartholinus. It is referred to by Cloquet: Oosphresiology.

‡ "L'Anatomie du Corps Humain." Par le Sieur de Saint Hilaire, 1698. Tome I, p. 439. Des maladies du nez.

of the membrane, which, in dilating, become joined together and form that which we call polypus. The acidity of the humors may indeed contribute to the generation of these excrescences, because it can coagulate the nutrient juice, which, becoming lodged in the glands, remains there, having lost its fluidity, and new juice flowing there and coagulating, it forms a tumor in the nose, which they call a polyp."

I am sure I may be pardoned for giving room to this verbose and confused extract, because it illustrates very well indeed the new light, as yet but little appreciated, which had been shed over medicine by the discovery of the circulation of the blood and the lymph, and by the demonstration of the glands as well as by the anatomical researches of Schneider. Through it all there runs the influence of both the Iatro-chemical and the Iatro-physical school.

Although he practically adopts the classification of Hippocrates, mentioning five kinds of polypi, Dionis*, the first edition of whose surgical work was published in 1707, makes this distinction between two varieties: "One is an excrescence formed by the engorgement of the glands which line the walls of the pituitary membrane, and the other is the extension of this membrane gradually elongated." One has only to read Boerhaave and Morgagni to perceive that they also had the idea of a membrane clogged with humors. Boerhaave in his *Institutiones*† could only account for the formation of a polypus by supposing that the nasal passages and the sinuses becoming clogged with inspissated mucus, the mucous membrane was unable to discharge its humors. Popular belief in the reality of lunar influences, a lingering of primeval superstition, is reflected in the works of Juncker‡ in his references to this subject. He says that according as the moon fills or wanes, the polypi of the nose increase or decrease in size. "Hence it may be concluded, it is best to attack the polyp in the waning of the moon." After this, it is necessary to add that he was a respected and distinguished medical writer in his day.

Gorter§ speaks of nasal polypus thus: "It seems sufficiently evident that the pituitary membrane is separated from the bone, often carious, in the cavity of the nostrils, so that it makes a pendulous sac, either single or multiple, according as this membrane is sepa-

* "Cours d'Operations de Chirurgie."

† "Boerhaave's Lectures on the Theory of Physic," being a genuine translation of his *Institutes*, 1755. Vol. IV, footnote p. 28.

‡ "Conspicius Chirurgie," 1721.

§ "Chirurgia Repurgata," 1742.

rated from one or more depressions of the small bones, which sacs swell with secretions collected in the cellular lamellæ of the membrane."

Heister*, the great German surgeon of the eighteenth century, adopts this pathology, and, referring to the earlier work of Palfin, who had made the same observation†, he speaks of polypi springing from the accessory sinuses and the cavities of the ethmoid.

Morgagni‡, while accepting this view, differentiates much more intelligibly than previous writers the various phases of intra-nasal disease. Referring to cases of polypi of the maxillary antrum reported by Meckren and Palfin, he says that they are much more frequently seen, at post-mortem, outside than inside the sinuses. He describes hypertrophies at the lower border of the inferior turbinated bones, which he regarded as glandular, doubtless more on account of their nodular surface than on account of histological findings, of which nothing was yet known in these cases.

The Anatomy
of the Acces-
sory Nasal
Sinuses.

We will now turn to the accessory sinuses which have, of late years, assumed a position of such striking interest in rhinology that they deserve a special notice of their anatomy, physiology and pathology. Notwithstanding that Galen refers in several places§ to the porosity of the bones of the head making them of little weight, there is no direct reference, so far as I can discover, to the sinuses. As we have noted, Berengar described them, and he is credited with being the first to definitely indicate their existence. Vesalius|| described the maxillary, frontal and sphenoidal sinuses, and asserted that they contain nothing but air. Both he and Fallopius (Institut. Anatom.), in quoting Galen, leave the impression that the latter had definitely noted the accessory sinuses. They agree with him in explaining the porosity of the bones of the head as having been created to render them less heavy. Massa, who wrote before Vesalius' work saw the light, also entertained¶ this view. We have noted that Colombo suggested the name Ampullosum for the os maxillare on account

* "Chirurgie," 1743.

† "A surgeon of Paris once told me he had seen a polyp which had its attachment within the cavity of the os maxillare and had grown through the hole of communication into the nose; this he had observed after death." Palfin: "Anatomie du Corps Humain," II me partie, Cap. 15, edit. 1726. p. 92.

‡ "De Sedibus et Causis Morborum."

§ As for instance De Usu Partium IX. 2 et seq.

|| De Humani Corporis Fabrica Lib. I. Cap. VI-IX

¶ Epist. Med. et Philosoph., 1542. Epist. V., p. 55.

of its sinus. After Berengarius, Fallopius* first added materially to our knowledge of the accessory sinuses. Describing the sphenoidal sinus, he says: "—there is no cavity in children until they arrive at maturity. In adults, however, it is found double and sufficiently large. It begins to form after the first year. — Those cavities, contained in the frontal and cheek bones, are not to be found in the skulls of the newly born." After criticizing some erroneous opinions which certain anatomists had entertained in regard to the sphenoidal sinus, he says: "The third opinion is that they serve for holding the air before it enters the brain. This, while a more respectable opinion, becomes ridiculous in view of their absence in infancy," and he adds the sage remark, "Ex his colligo licere cuique philosophari, at non semper sine errore." In another trite Latin sentence he accepts the idea of Galen., "Nam natura, cum vult extendere et non addere materiam, inflat et faciat ut illæ partes sint leviores." Notwithstanding the fact that this ancient view is still the accepted one, so far as we at present indulge in any teleological speculations at all, there have always been numerous divergences of opinion as to the uses of these cavities. Thus Vesalius† says: "There is much doubt as to their use. Each one forms his own conjectures. Some, as Placentinus, claim they contain mucous humor which is distilled into the nares; others that they serve to make the voice more resonant, because in those who speak badly they are not found. Some think the air is elaborated in them for the generation of the animal spirits. Spigelius thinks they are for drawing in the odors. Others think they contain the humor by which the eyes are moistened and lubricated." He himself accepted the view of Galen. A reference to Spigelius will show that he also regarded the sinuses as adding a sonorous quality to the voice‡, and Bartholinus supported him in this§, asserting they were not present in those of a faulty voice. Both Fallopius and Veslingus, as well as Jessen (1601), supposed they were also instrumental in the generation of the animal spirit. Jessen and Bartholinus believed the frontal sinus contained a viscid liquid, which lubricated the eyeball. Paaw|| speaks of the frontal sinus as containing a viscid matter, not dissimilar to the substance of the brain, but, "Far more likely in my opinion is the use of this

* *Gabrielis Fallopii. Obs. Anatom. Frankfort Edit., 1600, p. 367.*

† "*Syntagma Anatomicum.*" Appendix, Pars XIX.

‡ *De Human. Corp. Fabr., 1645.*

§ *Anat. Reformat., 1658.*

|| *De Human. Corp. Ossibus., 1633.*

cavity that of receiving the air drawn through the nostrils into it, so that it may be better assimilated and prepared for the brain. Unless it is thus properly prepared by this and other sinuses, the ingress of this crude and unprepared air causes catarrhal troubles of the brain." These opinions of more original observers are reflected in a curious book§ on anatomy published in English, evidently for popular use, by a Dr. Alexander Read, in 1642. He speaks of the frontal sinuses as double in childhood, but one in those of ripe age. "These cavities contain a clammy substance, kept in by a green membrane. They are for the retention of the odor, before it is carried into the brain." As for the sphenoidal sinus, he says, "there is a cavity like to those above the eyebrow," but he speaks of the ethmoidal as furnishing a way for the excretions of the brain. Schneider's works finally revolutionized all this. He declared that the sinuses had nothing to do with the animal spirit and were empty. The latter opinion, however, made its way very slowly. Almost a hundred years after Schneider, the great Boerhaave declared, in his lectures, not only that acuteness of smell largely depended on the size of the frontal sinus, their presence allowing a greater extent to the pituitary membrane, but he also was of the opinion that they acted as reservoirs for the nasal secretions. He remarks that the reason why children's noses are always running, is that the accessory sinuses are not sufficiently developed to contain the mucus. Much of Boerhaave's nasal pathology was based on this conception. The fluid, which the earlier anatomists supposed they contained, was thought to have come from the brain. After the publication of Schneider's works, Diemerbroek still believed, as has been stated, that it came from the brain, but through the mucosa which lines the nose and its cavities, thus keeping the latter full. Vieussens (born 1641) supposed they contained a thick fluid, filtered out of the blood on its way to the brain. Much later the great Haller* in the eighteenth century accepted this view, intimating they were reservoirs for lubricating the nasal mucosa. Verheyen (1648-1710) had, however, previously asserted they were empty. Reininger partook of the view of Haller, saying the sinuses were so arranged as to the nasal cavity that whatever position we are in, their contents will drain out of one or more of them, collecting in the others, until they in their turn are emptied by a change of position. Morgagni* declared the maxillary sinus was occasionally

§ "The Manual of Anatomy, or Dissection of the Body of Man."

* *Elementa Physiologiae Corporis Humani*. T. V., P. 180, Liber XIV-V.

* *Adv. Anatom.* I, p. 38-VI, p. 116.

absent. Weinhold (1783-1829) thought the sinuses were cavities, which suck the impurities out of the blood and hold them, and that they are to be regarded as the equalizing apparatus, the "equatorial bearers" of the arterial system throughout the animal kingdom.* The frequency with which the accessory sinuses have lately been found, post-mortem, to contain sero or muco-purulent fluid, satisfactorily accounts for this divergence of views. A more palpable error was committed by Spigelius, Bauhinus, Laurentius, Paaw and many others in supposing that the sinuses are lined by a green membrane. It was pointed out by Schneider that this condition was entirely due to post-mortem changes.

Wounds of the
Accessory
Nasal
Sinuses.

Early surgeons were familiar with the wounds, but not with the diseases of the frontal sinus. Hence we find at first no reference to the intentional opening of it, but evidently it was occasionally inadvertently included in the field of operation in trephining for cranial fractures. Ambroise Paré†, speaking of the wounds of the head, warned against trephining the frontal sinuses, as they are "filled with white sticky fluid as well as with air." Elsewhere‡ he says that he had seen a surgeon trephine the sinus, in wounds of it, under the impression the brain was injured. "Wherefore it is necessary for the surgeon to become acquainted with this cavity, which he can do by breaking open several heads of the dead."

Fabricius Hildanus (l. c.) speaks of wounds of the frontal sinuses "not healing easily and often degenerating into fistulae and malignant ulcers." "The wounds of these cavities have such a large communication with the eyes, that I have seen acrid and corrupted pus, which flows from these cavities, fall upon the conjunctiva and push the eye out of place." Verheyen§ says that he was once present at an operation on a sheep, for the removal of worms from the frontal sinus, but the animal died because the operation was too extensive. Palfin had seen the same mistake as Paré, and his differential points to distinguish the frontal sinus from the cerebral cavity in wounds of the head were: 1. "When one sees mucus coming out of the wound. 2. When air is blown from the wound by expiratory effort with closed mouth and nose. 3. The penetration of injected bitter water from the wound to the throat, or 4. Its discharge from the nose." He relates several interesting cases where this mistake was made.

* The incompleteness in the references, to be here noted, may be supplied by referring to the much more exhaustive history given by Zuckerhauhl, *Normale und Pathologische Anatomie der Nasenhöhle* Bd. 1, 1893, S. I.

† "Chirurgie," Livre X, Chap. 21, Edit. 1564.

‡ Livre V, Chap. 4.

§ Quoted by Palfin: "Anatomie Chirurgicale," part II, p. 93, Edit. 1726.

The remark of Verheyen, in regard to worms in the frontal sinus of a sheep, finds a precedent in human pathology in the observation of Beniveni, published as early as 1507*. He relates the case of a friend of his by the name of Phillip, who suffered atrociously with such pain in the head that his eyes grew dim, his mind wandered, vomiting occurred, the voice was lost, the body was cold and even life itself seemed lacking, but when death really seemed imminent and there seemed no help, he suddenly passed from his right nostril a worm as long as a palm's breadth, and of a most robust nature, and all his anguish was relieved.

Worms in the
Accessory
Nasal
Sinuses.

Morgagni,† referring to Littré as having, in 1704, conceived the idea of trephining the frontal sinuses, says that Mangetus, according to Vallisnieri, had performed the operation for the removal of a worm whose presence he had diagnosticated as giving the patient great pain. According to Cloquet,‡ Vallisnieri was the first who spoke of worms in sheep's noses from the true standpoint, but Morgagni, speaking of worms being frequently found in sheep's noses and rarely in man's, credits Fernelius§ with having first declared that the brain was not the origin of worms in the nose. This subject of worms in the nose was exhaustively discussed in the first part of the eighteenth century by Salzmann and Honold.||

The following is from Boerhaave's "Institutiones" No. 792:

"There was a distressing example of a girl at Rotterdam, whose six pituitary sinuses were all full of worms, which kept on growing and appeared from hour to hour; and this girl I cured by a slight fumigation with cinnabar and a decoction of tobacco in water, which, being snuffed up the nose, obliged the worms to move their quarters."

Perhaps the earliest reference to what may have been sinus suppuration is to be found again in Fernelius: "There forms sometimes abscesses around these places without fever or very much pain, and after their rupture I have seen true pus run in abundance from the nostrils, as it comes out of purulent ears, and this without any prejudice to the general health." Morgagni (l. c.), from whom I have quoted this extract, comments on it, saying

* Antonii Benivenii, de abditis nunnullis ac mirandis morborum et sanationum causis, 1507.

† De Sedibus et Causis Morborum Liber I. De Morbis Capitis, Epist. Anatom. Med. XIV sec. 20 et seq. 1762.

‡ "Oosphresiologie," p. 617.

§ Fernelius, born in 1497, died 1538, was the physician who cured the beautiful but frail Diana, of Poitiers, and is said to have been the first, since the time of Al-Mamun, the Arab, (876-833), to calculate the circumference of the globe.

| De Verme Naribus Excusso, in Haller's "Disputat. ad Morb. Hist.," I, 385, 1721.

that doubtless Fernelius was referring to the accessory sinuses, "for how could a man like him suppose the pus came from the anterior cavities of the brain?" One might answer, that without the anatomical knowledge supplied by Schneider 100 years later, it would have been strange if Fernelius thought of the pus or the worms either, as having come from any place but the brain. One is therefore not surprised on turning to the passage,* evidently referred to by Morgagni, to find no warrant for supposing that Fernelius suspected the true origin of the pus or the worms. His work appeared first 1567.

Surgery of the
Maxillary
Sinus.

Nathaniel Highmore, in 1651, described† the sinus, which bears his name, and gave some poor representations of it. He, however, mentions a case of suppurative disease of the cavity in a woman who had some bad teeth in the upper jaw. This was before the publication of Schneider's work, though, as we have seen, the sinuses had long been well known.

Velpeau‡ quotes Molinetti, who wrote in 1675: "In a patient suffering from terrible pain, they made a (external) crucial incision on the jaw, and with the crown of the trephine penetrated into the antrum of Highmore, which was the seat of the abscess."

Morgagni intimates that Jean Henry Meibomius, who died in 1655, invented what we now know as Cowper's operation for opening the maxillary antrum, and his son practiced it. Velpeau says that Zwingler, before Meibomius, pulled out teeth and, dilating the alveoli with a sponge, made exit for pus from the antrum. There were three medical authors by the name of Meibomius, apparently different generations, but their works, as well as that of Zwingler, are inaccessible to me. William Cowper contributed the chapter on the diseases of the nose to Dr. Drake's "Anthropologia Nova," which was published first in 1717, and there§ is to be found the description of the operation as we know it. || " * * * By all which, it appears with what difficulty any peccant humor, lodged in either of these cavities, can be discharged by the foramina narium, since these cavities must be either filled up to the top ready to run over first, or the head must be held down to procure the discharge. This induced me to put into practice an operation, in the cure of

* Joanni Fernelii Ambiani, "de Morbis Universalibus et Particularibus," Edit. 1656 Lib. V Cap. VII.

† Corporis Humani Disquisitio, 1651.

‡ Nouveaux "Elements de Medecine Operatoire," 1839, VII, p. 608.

§ Vol. III, Cap. 10, p. 305, Edit. 1717.

|| From the spelling which is usually employed (Cooper) doubtless many have attributed this operation to Sir Astley Cooper, who lived a hundred years later.

ozena, which appeared reasonable to me by the structure of the part. I being convinced it might be done without hazard to the patient. After the foremost Dens Molaris was taken out, not finding an aperture from its alveolus into the antrum, which in other instances I have seen happen, with a convenient instrument I bored the hole of the alveolus into the Antrum Genæ, whereby the pus, which before lay in the antrum, ran out, and the medicines that were daily injected by this aperture passed into the nostrils, whereby the patient was cured, though this disease had continued, with a vast flux of stinking matter daily from the nose, for more than four years before the operation." Besides another case operated on in the same way, he relates the history of an old man in whom the maxillary antrum was opened. Carious bone came away with the teeth, when extracted, and the man soon died from convulsive disorders. when, on post mortem, a fistulous tract was found through the Foramen Lacerum; the opposite side of the os sphenoides was also perforated and the dura-mater laid bare but not perforated; but on the contrary it was inflamed, and very much thickened on that side of the head: "I found an aposthemation in the cortical substance of the fore part of the hinder lobe of the brain, though covered with the pia mater, in which was about an ounce of fetid matter." He also first suggested the perforation of the antrum on its anterior surface. According to Portal*, Lamorier, a surgeon of Montpellier, born in 1717, proposed, as the result of his own investigations, to open the sinus more posteriorly, between the malar tuberosity and the third molar tooth. Jourdain, a Paris dentist, in 1765 reported to the Royal Academy of Surgery of Paris a method of washing out the Antrum of Highmore through the natural opening.† He also is credited with the observation, which of late has again been brought into prominence, that fetid matter is often found in the maxillary sinus of those who had succumbed to adynamic or ataxic fevers. For opening the sinus Desault used a sharp triangular perforator, Runge used a knife, and Chas. Bell a trephine. I further translate from Velpeau the following: "In a patient, who had no longer any molar teeth, the idea occurred to Gooch‡ to perforate the Antrum of Highmore from its nasal surface. This method was also proposed by John Hunter in his treatise on the human teeth in 1778. Ol. Acrel§ had already followed an almost similar procedure,

* See Velpeau, l. c., who gives a very exhaustive account of the earlier literature, but unfortunately without exact references.

† "Journ. de Med. Chir. Pharm.," etc., Paris, 1767, XXVII, —52, —157.

‡ An English surgeon who died in 1780.

§ A Swedish surgeon born in 1707 and died at 90 years of age.

that is to say, after operating in the manner of Cowper he placed a second canula through the nose into the sinus. * * * A buccal fistula of the maxillary sinus suggested to Ruffel* the idea of penetrating there with a perforator, making it come out above the gum in order to establish a counter opening. A seton was then passed and kept in the opening for six weeks, working so well that success crowned the efforts of the surgeon. Callisen (1740-1824) followed this plan. * * * Bausch and Henkel succeeded by passing a seton through a fistula in the floor of the orbit and bringing it into the mouth through an alveolus. Bertrandi resorted to a like plan, not, however, using the seton. Weinhold (1810?) went through from the upper part of the canine fossa into the antrum and thence through into the palatine vault. Jussi operated in much the same way."

On reference to Callisen's work† I find that he refers to abscesses of the frontal and maxillary sinuses. He advised operation by trephine on the former, and perforation through the canine fossa in the latter. He advises that the opening should be kept pervious by a linen tent, or a sponge, or a tube made of elastic resin, (resinæ elasticæ—rubber?) or of gold, so arranged that it will not slip into the cavity. He declared that penetration through the hiatus-semilunaris, as recommended by Jourdain, is often impossible. He was also familiar with polypi in the Antrum of Highmore. I am sure any one, reading these accounts of operations on the Antrum of Highmore for suppurative disease, will perceive that all the recent procedures, which have been of late so exhaustively and frequently described, have been long anticipated in surgery. Tumors of the maxillary sinus we have noted as having been reported by Palfin and others. Van Ruysch reported finding two at post-mortem.‡ In the *Journal de Desault* in 1791 is an account of an operation of considerable gravity by Plaignand in 1784 on a tumor of the maxillary antrum which was successful.§ Another case is reported||, in which the disease was allowed to pursue its course unmolested, and the patient died three years after its inception.

It remains to say something in regard to diseases of the tonsils during the period with which we have been dealing. Very little advance is here to be noted. Beside the hypertrophy, disease of the

Diseases and
Surgery of
the Tonsils.

* I can find no other reference to a physician of his name.

† "Systeme a Chirurgie Hodierna," Vol. I, p. 343, et seq., 1798.

‡ Frederici Ruyschi Opera Omnia Obs. LXXVII, Vol. I, p. 71, Ed. 1737.

§ T. I., p. 111

|| Ibid. T. II, p. 278.

tonsillar structure is rarely alluded to independently of acute throat inflammations. Sydenham incidentally made the singular remark, but doubtless well founded, that red-haired people were more liable to tonsillar inflammation than others. Ettmüller,* in his remarks on inflammation of the tonsil, draws attention to the gaping of the foramina. "On account of this," says he, "when these tonsils are swollen and more or less inflamed these foramina gape and are more conspicuous, so that they are taken for ulcers by the inexperienced surgeons." Fallopius had also drawn attention to this point, still frequently the source of error.

As to operations on the tonsils, coming down as late as the middle of the eighteenth century, we find surgeons still, as ever, with a wholesome respect for tonsillar hemorrhage. Heister's category (l. c.) of operations on the tonsils is: 1. Corrosive applications. 2. Abscission according to the methods of the Ancients. 3. Ligation, using the apparatus of Hildanus for the uvula. Cheselden, he says, applied such a ligature by means of a sound. Benjamin Bell (l. c.) employed his double canula snare for ligation of the tonsils, in the same manner as for nasal polypi. A method, which he also ascribes to Cheselden, was to pierce the tonsil with a double threaded needle, and tie off each half of the tonsil in a ligature. Even such a radical operator as Desault†, although he performed tonsillotomy with an instrument he called Kiotom (Uvulotome), yet in pusillanimous patients he used a ligature put on with a forceps, and tightened for a day or two until the tonsil fell off.

Anatomy of
the Nose
and Throat
in the Eight-
eenth
Century.

In the eighteenth century but few advances are to be noted in the gross anatomy of the nose and throat when compared to the much greater strides made in the sixteenth. Still there were some. We have already noted the description of the pharyngeal tonsil by Santorini. He first described the cartilages in the larynx which have taken his name, declaring they are found in man but not in animals. He drew attention to the great mobility of the crico-arytenoid joint, and gave the first intelligent account of intralaryngeal movements.‡

Bertin described the sphenoidal turbinated bones.§ Meckel and Ackerman and Daniel wrote learned and valuable treatises on the nervous system of the nose and throat.|| Valsalva had

* Opera Omnia. 1686.

† Œuvres Chirurgicales, Vol. II. Edited by Bichat.

‡ "Observationes Anatomicae." 1724, De Larynge.

§ Description de deux os inconnus, par M. Bertin, "Mem. de L'Academie des Sciences," 1744, p. 298.

|| Ref: "Sprengel," VI, 162.

Pathological
Anatomy.

written his great work on the ear* which was first published in 1705, and described more accurately the palatal muscles, but not his least claim to fame in the annals of medicine is the fact that he was the preceptor of Morgagni, and started him upon that series of observations at the post-mortem table, which has resulted in the firm basis modern medicine now has in pathological anatomy. The predecessors of Morgagni were too much occupied with rare cases and fabulous histories, the curiosities of Medicine, to make much advance in this direction. Post-mortem examinations were not infrequently made in the seventeenth century, and even in the sixteenth century. Thus we find Tulpus, who rivaled Bontekoe in his devotion to tea and tobacco as panaceas, describing† a malignant tumor of the pharynx and œsophagus observed during life and examined post-mortem. Incidentally in many epistles of Thomas Bartholinus and of many others there are scattered accounts of the study of lesions found post-mortem. Bonet is the first who systematically recorded‡ the history of cases and the results of observations on opening the body after death, but his work is a most verbose, unclassified, and entirely unreadable record of much which might in other hands have been valuable. In it we find the confirmation of Schneider's observations, but in his zeal to prove that the blood vessels carry the nasal discharges, he exaggerates and distorts the significance of anatomical facts. He taught that the mucus was derived from the blood and lymph vessels of the glandular mucosa, and that in the brain they absorbed and carried away its secretions. Nevertheless, he opened the way for the observations of Valsalva and his great pupil, Morgagni. It may be remarked that the latter refers to Bonet as having reported some cases of laryngeal tumour observed post-mortem, but I have been unable to find the reference.

Morgagni.

Although the immortal "De Sedibus et Causis Morborum" was not published in its entirety until 1762, when Morgagni was nearly eighty years old, his "Adversaria Anatomica" was published when he was a young man (1706-1723). A few points of interest to us may be found in it. He was somewhat influenced by Van Ruysch§ in his description of the nasal glands. The tracheal glands first mentioned by Laurentius he describes more fully.|| He speaks also

* "Valsalvæ Opera." 1742 *Auris Descriptio*. Cap. II. XIX.

† "Observationes Medicæ," 1641, Lib. I. Cap. 44.

‡ "Sepulchretum" first edit. 1679, another and enlarged edition by Mangetus in 1700.

§ *Advers. Anatom.* VI. *Animad.*, 89,

l. c. I., 25

of the laryngeal glands* and made the singular mistake, on noting the cuneiform cartilages, of describing them as glands. This mistake many years later was corrected by Wrisberg,† whose name they now bear. Morgagni passes in review the anatomical facts brought to light by early anatomists as to the cartilaginous framework of the larynx.‡ Galen first noted and described the ventricles of the larynx, giving them that designation, but Morgagni's name has been attached to them on account of his more elaborate description. He also described the *Appendices laryngis ventriculorum*.|| He supposed that the ventricles are instrumental in modifying the voice, but he warned against the reasoning from animals like the frog to man, various authors having explained their function in this way. Nevertheless, he thinks this more probable than that they form reservoirs for mucus to lubricate the cords. He ascribes this opinion to Verheyen. He points out that the surrounding mucosa is quite as well supplied with glands as are the ventricles.

When we turn to his more celebrated work we find that the first subject which engages our attention in the chapter which he devotes to the nose and ear is that of deviation of the septum¶. Quelmalz** had in 1750 written a treatise on this subject, the first, so far as I know, of its kind. It is still a readable thesis, in which much which is discussed in modern rhinological literature may be found intelligently set forth. Among the causes of the conditions he mentions, are pressure on the nose in difficult labor, falls in infancy, the continual thrusting of the finger into the nose in childhood, inflammatory conditions, and others, which we do not now regard as efficient. He speaks intelligibly of the symptoms and the sequelæ, but says nothing of the treatment. Morgagni, criticizing him for not mentioning exuberant growth of the cartilage, speaks of often finding this condition on post-mortem dissection. Deviation of the septum, he declares, is often natural, and he warns observers

Deviations
and Spurs
of the Nasal
Septum.

* 1. c. V., 42.

† In the notes to Haller's *Primæ Linæ Physiologicæ* edited by Wrisberg, this error was pointed out in 1780.

‡ 1. c. I., 23.

§ 1. c. I., 16.

|| 1. c. V., 42, V. 43.

¶ The *De Sedibus et Causis Morborum* has been carefully translated into French by Desormeaux et Destouet, and some readers will find it more convenient to consult this ten volume edition than the original Latin work. The same references apply to that. See "*Des Maladies des Oreilles et du Nez*" No. 16 Tome II., p. 343 et seq. Edit., 1820.

** *Programma de Narium earumque septi Incurvatione*. Haller's *Disputat. ad Morborum Historiam*, 1757. T. I., p. 377.

against being deceived by those who write in an absolute manner that the nose is divided into large equal cavities by an intermediate septum. On the other hand, "To this error another is opposed by those who say the septum is always inclined to one side or the other, except in children." He had seen in adults many straight septa. Then follows the explanation of the cause of deviated septa which still holds good after 150 years: "The too rapid growth of the septum relative to the other bones of the upper jaw, from which reason there necessarily results a curvature." He also described very carefully a septal spur without deviation in an old woman. I have already had occasion to refer to Morgagni's views on nasal polypi and his notice of hypertrophies of the inferior turbinated bone, which he regarded as glandular.

The Cerebro-Spinal Fluid.

Bidloo* had described a case in which cerebro-spinal fluid had escaped from the nose as a result of injury. St. Clair Thomson† has quoted another case, reported previous to this by Willis‡ whose nervous fluid theory Bidloo earnestly combatted. Morgagni§ had also seen such a case. He was also aware of the existence of what was afterwards known as Jacobsons' organ, which had been noted by Steno and Van Ruysch.

I will reserve Morgagni's important observations on laryngeal ulceration until I have occasion to trace the history of laryngeal phthisis, introducing here, however, his notice of slight irritation in the auditory canal as a cause for persistent cough.¶

Diphtheria.

Lieutaud was the follower of Morgagni, and recorded many interesting observations made at the post-mortem table, but his work is really nothing more than a note-book, unclassified for the most part, and without any deductive instruction. Besides laryngeal and tracheal polypi and ulceration of the larynx, we find¶ this remark on the pathological conditions in the air passages of a girl evidently dead of diphtheria: "*Glottidi hærebat materia quædam mucosa. Interior tracheæ facies crusta viscida and purulenta investiebatur,*" etc. There are records of other cases of a like nature. He observed pus in the frontal and occipital (sic) sinuses.**

* "Exercitat. Anat. Chirurg. Dacas," 2, 7, 1708.

† The Cerebro-Spinal Fluid, 1899.

‡ Cerebi Anatome.

§ L. c. No. 21. He apparently did not recognize it as of cerebral origin.

¶ L. c., XIX, 54.

¶ "Hist. Anatom. Med.," 1767, Tom. I, p. 435.

** "Tom.," II, p. 292.

A CASE OF MALIGNANT GROWTH OF THE UVULA.*

BY F. C. RAYNOR, M. D.,

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Malignant neoplasms of the uvula are of very rare occurrence. As an illustration thereof, I may state that in my fifteen years' service in the throat department of the Brooklyn Eye and Ear Hospital, embracing some 14,000 cases, none such has been encountered. The following, therefore, seems worthy of being placed on record.

Mr. S., aged 66 years, first consulted me June 12, 1901, being referred to me by Dr. F. C. Paffard. He complained of a constant irritation of the throat, an inability to sleep except when lying on the right side, owing, as he described it, to shortness of breath, and an escape of saliva when in the recumbent posture. He had an attack of grip in January, of the catarrhal form, but his throat did not trouble him especially, till March, since which time his discomfort has been continuous and increasing. The patient was of fine physique and good general health, and there was no family history of malignant disease. His uvula was amputated thirty-five years ago, and he had antral suppuration fifteen years ago, which was cured by drainage through an alveolar puncture.

On examination I found an elongated and edematous uvula, behind which was a nodular mass, strongly suggesting a pharyngeal adenoid. Further examination showed that this mass was connected to the posterior surface of the uvula, its upper margin terminating on a line with the velum, extending about one-fourth of an inch on each side, and about half an inch below the tip of the uvula, the whole forming a flattened cylinder about one inch long, three-fourths of an inch wide and half an inch thick. It was slightly eroded at the end. There was no interference with deglutition or phonation. Examination was difficult, owing to the natural formation and extreme irritability of the part, but I finally satisfied myself that there was no further pharyngeal involvement. The nose was also free from any growth. Although there was nothing

*Read before the Kings County Medical Association, Jan. 14th, 1902.

to indicate syphilis, as a matter of precaution, anti-specific treatment was instituted, and local detergent, and sedative applications ordered. The result of the foregoing being negative, operative methods were resorted to. June 28 the growth was removed by the cold snare, under ether anesthesia administered by Dr. Paffard. It was intended to employ the galvano-cautery loop, but even under deep anesthesia the irritability was so extreme that it was impossible to safeguard the surrounding tissues, therefore this procedure had to be abandoned. The growth was snared off well above its point of inception, the operation was practically bloodless, and healing prompt and uneventful. The growth was photographed and submitted to a pathologist with the request that the specimen be preserved.

Unfortunately the plate proved defective, and the pathologist inadvertently neglected to preserve the growth, so that I am unable to show you the existing conditions as I intended. Although the advanced age of the patient favored the probability of malignancy, still the absence of symptoms characteristic of malignant growths, i. e., pain, hemorrhage, adenopathy, cachexia, etc., led me to hope that this was benign in character. This idea was strengthened by an experience I had some years ago, when a growth of very similar appearance and behavior, having its origin at the base of the tongue, proved to be benign, although the pathologist reported it as malignant.

Knowing the beneficent effect of arsenic, in epithelial and sarcomatous growths, as exemplified in the teaching and practice of my colleague, Dr. S. Sherwell, as a matter of precaution, I at once put my patient under the influence of the drug, which was so illy borne, that the quantity administered was comparatively small. After considerable delay the report of the pathologist was received. It was extremely guarded, and was to the effect that the growth was atypical, was in all probability malignant, and the examiner was disposed to class it among the carcinomata.

The history of the case subsequent to the operation, is as follows: The patient was seen at intervals of one to two weeks. There were no subjective or objective symptoms till about October 1, when, after his summer sojourn in the mountains, he returned to the city and contracted a cold. He then complained of a sore throat, but there were no signs of recurrence, only those of a general pharyngeal inflammation. The usual treatment for such con-

ditions gave no relief. He continued to complain of severe pain, referring it to the base of the tongue and larynx, although nothing could be seen. On December 6, after a two-weeks' interval I discovered a small fungous growth just to the left of the site of the operation, growing downward from the border of the velum. Four days later a localized swelling on the hard palate to the right of the median line, about a half inch in diameter was observed, together with a linear erosion, extending upward from the fungous growth above mentioned.

At the solicitation of friends, the patient moved to Manhattan the following week, for treatment by the X-ray.

66 Livingston St.

**Case of a Parasite—"Argas (or Ornithodoros) Meguini" (Dujes)
—in Each Ear.** J. C. SIMPSON. "*Lancet*," April 27, 1901.

A patient brought the author a living specimen of this tick, which he said had come from his right ear of its own accord on the previous day. Nothing abnormal was found in that ear, but on removing some wax from the other a parasite similar to, but smaller than, the other specimen was plainly visible closely applied to the drum. As it is very important not to leave any portion of the suckers or hooks in the tissues, more especially in the drum, by soaking a small pledget of wadding with chloroform, and inserting it into the canal for a few seconds, the tick was rapidly killed, and was easily removed by syringing. On examination, it was found to be entire, and no injury was visible to the drum of either ear.

The previous history of the patient was that he had camped out in Arizona in the month of June. He returned to his home in Massachusetts, U. S. A., at the end of that month, and then "had some curious sensations in the left ear, a sort of pain above the ear, and a rattling sound in the ear. These feelings decreased and had almost passed away, though the rattling was occasionally heard" up to August 25, when the live parasite came from the right ear, which apparently had not been the subject of any striking abnormal sensations.

The article is illustrated by drawings of the parasite. It is about three-sixteenths of an inch in length, and the magnification of the photograph is slightly over $\times 6$. The larger living specimen was more than double this size, and broad and thick in proportion. In color and general appearance its body resembled an unroasted coffee bean.

ST. CLAIR THOMSON.

TWO UNUSUAL CASES OF HEMORRHAGE FOLLOWING ADENOTOMY AND TONSILLOTOMY.

BY DUNBAR ROY, M. D.,

Clinical Professor of Eye, Ear, Nose and Throat Diseases in the Atlanta College of
Physicians and Surgeons.

Hemorrhage, immediate or secondary, following the removal of tonsils, is an accident liable to occur with any case. Up to the age of ten years, the danger of hemorrhage is at its minimum, and scarcely ever will one be annoyed by this accident when removing tonsils in the very young. This statement must be modified so as not to include patients with the so-called hemorrhagic diathesis.

Hemorrhage to an annoying degree following the removal of adenoids, is still less liable to occur, and yet "all things are possible" even when we think we are most securely fortified. Dr. W. A. Martin, of San Francisco reported in *The Laryngoscope*, of July, 1899, a series of three cases where he was troubled with severe hemorrhage following the removal of adenoids. In all of these cases the operation was performed with the Gottstein curette as is done probably by the majority of operators. Personally, I always prefer the forceps, for I am firmly convinced that you are much more liable to be annoyed with troublesome hemorrhage following the operation when the curette is used than when the forceps are resorted to.

An unique experience with two recent cases, prompts me to report the same:

Case 1. Miss N., age 15, was brought to my office by her mother to find out why her daughter breathed so constantly with her mouth open and was troubled so much with a collection of mucus behind the nose. The patient was a well grown, healthy looking girl with good color. She had a most excellent throat to examine, in that both probe and posterior mirror could be used simultaneously. I found a bunch of adenoid tissue in the nasopharynx which was evidently the source of her trouble. As she had such perfect control of her soft palate, I cocaineized the adenoid tissue, used the suprarenal extract and then removed a small piece

with the post-nasal cutting forceps. There were but a few drops of blood following the operation. Having decided to remove all the adenoid by degrees, the patient was allowed to return home. This was at 11 o'clock a. m. At 2 o'clock I received a telephone message that the patient was bleeding excessively from the throat and with the request that I come out as soon as possible. This I did and found the patient rather weak and pale from the loss of blood. A large clot had formed on the nasopharynx and this hung down below the soft palate. Alongside of this the blood was trickling down. I first tried a solution of the suprarenal extract run through the nose. This was tried faithfully, but without results. I then introduced a soft catheter through the nose and allowed a clot to form around the end in the nasopharynx. This stopped the hemorrhage, and, thinking that if this could continue for a short while, the bleeding would be stopped permanently. I made the catheter fast in the nose and directed the patient to be kept perfectly quiet. This proved to be adequate for two hours at the end of which time I was again summoned for the renewed hemorrhage. I then decided to plug the posterior nasal cavity. This I did twice without result. I then introduced the third tampon, making it as large as possible. In about two minutes after its introduction the patient fainted and it was not until then that the hemorrhage ceased. The patient was kept quiet, fed on liquid diet and at the end of thirty-six hours the plug was removed. No further trouble was experienced and the patient was out again in two weeks.

This patient presented none of those appearances usually found in those of a hemophilic diathesis. On inquiry, I ascertained from the patient's mother that the daughter's monthly period was due at the time of the operation but had not made its appearance. It did so a few hours after the hemorrhage ceased. The question very naturally arises, was this not one of the anomalous cases of vicarious hemorrhage persisting after an exciting cause? The question of secondary hemorrhage following the use of the suprarenal extract also presents itself. I am inclined to the first theory being largely fortified by my previous experiences in the removal of adenoids. Such persistent hemorrhage even after the post-nasal space has been plugged, certainly argues some systemic dyscrasia. In the future I shall certainly always be more careful to inquire as to the catamenial period before attempting any operative procedure.

Case 2. Annie S., age 4, was brought to my office to have her tonsils removed. The engagement for the operation was made on the advice of the family physician, the case never having been seen by me. The tonsils were found to be enormously hypertrophied. The child was apparently well nourished, but pale and exceedingly nervous. The right tonsil was quickly removed with a McKenzie's tonsillotome and was followed by the usual amount of bleeding. By the wishes of the parents one tonsil only was removed. This was done on Saturday, and during the next three days the father telephoned me that the little patient had had absolutely no trouble. On the following Thursday morning early, I was telephoned for to see the patient who had vomited about a pint of bloody grumous material. The blood was clotted and of a bright red color. The mother informed me that there had been a little bleeding on the day previous, but as it did not run out of the mouth she concluded that it was of no consequence. As the child's pulse and general condition seemed good, and no blood appeared at the mouth when head hung over the bed, I ordered the child to be kept in bed, for her to be given cracked ice and ice cream internally and to report if there was any further trouble. Nothing was heard from the patient until 1 o'clock that night, when I was again telephoned that the child had vomited another large amount of blood and was very weak and pale. I found the child asleep on my arrival. The pulse was regular and not unusually rapid. From previous knowledge, I felt that if I attempted to examine the child's throat, the crying, muscular exertion and nervous shock would do more harm than good, and in a child of that age very little could be accomplished locally without the use of a general anesthetic. I then had the child given 1 grain of the powdered extract of the suprarenal capsule every two hours, the whole amount mixed with the second spoonful of ice cream. This to be done for twelve hours, the child in the meantime being kept quiet. Whether such bleeding as was there stopped naturally or was influenced by the suprarenal extract, I do not know. However, we had no further trouble and the child made an uninterrupted recovery.

A case of this kind is always annoying to the laryngologist. Here is an only child, nervous, over-indulged by anxious parents and going into violent spasms of screaming on the least attempt to look at the throat. Mild expectant treatment in cases of this kind is certainly the best discretion when the physical signs show

no alarming conditions present. I have searched carefully in the various text books and literature, for any reference to similar cases, but have been unable to find even a reference. Naturally, one might say in reference to the first case that no one should operate during the climacteric period, and yet few of us are always careful enough to inquire into the physical state of the patient when about to remove a small piece of adenoid tissue. Such an experience as the above should certainly warn us of this possible concomitant danger, and reference to it should at least be made in those text-books which pretend to be a complete guide to its readers.

In the first case the interest centers in the fact that secondary hemorrhage occurred five days after the operation of removing the tonsil, an interval longer than any I have found in the literature bearing upon the subject. Then, again, the fact of the hemorrhage taking place in a patient so young is unique in itself. We find cases reported of secondary hemorrhage in the adult, but none where the patient was so young as the above.

Grand Opera House Block.

“On the Use of A. C. E. Mixture and Ethyl Bromide For Adenoid Operations.”—J. W. GLEITSMANN, *Medical Record*, Dec. 2, 1901.

Since 1894 the author has employed ethyl bromide for the production of anesthesia in these operations, and prefers it to any of the other anesthetics for short operations. The operation is performed in the upright position, with the aid of two trained assistants.

When the A. C. E. mixture was given, the anesthetic was started with the patient in the recumbent position, and after the patient was thoroughly under its influence, the child was gradually raised to the upright position.

Though extensively employed by the author he had but one accident (attack of suspended respiration), due to a tight band of a skirt which had not been removed. The child promptly recovered by the use of the ordinary methods. At present the ethyl bromide is used by the author almost exclusively with pleasant results. An air-tight mask should be employed and this should be pressed firmly on the child's nose and mouth. Merck's one-ounce glass tubes are recommended, as they give very little waste. (The abstractor can testify to the sense of security one feels in administering this prompt and safe anesthetic.)

M. D. L.

CORRESPONDENCE.

Port Huron, Mich., December 9, 1901.

Editor The Laryngoscope :

In the September number of The Laryngoscope I noticed an article by Dr. Chappell on the "Diagnosis of Adenoids in Infancy," and out of between four and five hundred examinations has not found a case in any child under three months. He also seems to doubt that they are ever congenital, and as I had one case in which I was able to demonstrate that the child not only had adenoids, but that they were almost certainly congenital. I thought that probably Dr. Chappell and others of your readers might like to know of such a case and concluded to report it. On February 28, 1899, Mrs. G. S., age 24, healthy and strong, was confined of a son, a lusty fellow and weighing nearly nine pounds, and seemingly all right. On my visit the next day the mother told me that she believed the baby was going to be a snorer; that he seemed to have some trouble with his nose.

I examined him superficially and not finding anything marked, and, thinking that it was some temporary trouble, and probably somewhat exaggerated in the telling, I paid no further attention to it.

On March 11 she sent for me and said that something would have to be done for the baby, as he snored so dreadfully that she was afraid to go to sleep for fear he would strangle, and also could not nurse and breathe at the same time; would take a pull or two and would have to let go to get his breath. Otherwise he was all right.

From the description I immediately thought of adenoids, but thought it hardly possible in one so young. If such was the case, what could I do? How could I remove it? In looking over my instruments, I took one of Professor Myles' ring curettes, large size and flexible shaft, and bent it into the shape I thought a baby's naso-pharynx would be, and, taking some chloroform, went up to the house.

I watched the baby nurse, and from the general appearance, etc., I concluded that the trouble was adenoids, but to be sure examined the nose through a small ear speculum and found the nose perfectly free. I then examined the chest carefully, both front and back, to assure myself that it was not due to trouble below the throat. Having, in my own mind, pretty thoroughly cornered the trouble down to adenoids, I suggested to the mother that she let me give the baby a little chloroform and see if I could get my little finger up behind the palate, and then I could be sure. She consented, and after considerable trouble, I was sure I could feel a small growth. I took the Myles' curette previously mentioned and introduced it up behind the palate and then could feel the growth. I reached up as far as possible and brought the curette backward and downward in the usual way and was much gratified to get a piece of adenoid tissue, about three-eighths of an inch wide by one-fourth inch deep. I introduced it again, but on account of the blood, did not find any more. The baby nursed within two hours after the operation, and has had no trouble with nursing or breathing from that time to the present.

It struck me at the time that I did not remember anything in literature of a case so young, and intended reporting it, but outside of our local medical societies did not do so, but, seeing Dr. Chappell's paper, I thought that this case nearly proved that adenoids could be congenital. If this report is of any use to you in *The Laryngoscope*, you may print it. Most respectfully yours,

O. Stewart, M. D.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Stated Meeting, January 22, 1902.

EMIL MAYER, M. D., Chairman.

An Unusual Type of Stammering.

Dr. W. K. Simpson presented a young man showing an unusual type of stammering. His health was excellent, and there was no history bearing on the case except that since early childhood he had been unable to speak except with difficulty, and that this had grown very much worse in the last few weeks. On attempting to speak he would place his hand over the mouth and apparently yawn.

Fibroma of the Pharyngeal Vault.

Dr. Francis J. Quinlan presented a case of fibroma of the pharyngeal vault, occurring in a young boy. On the introduction of the forceps an alarming hemorrhage occurred, and further examination showed an enormous growth, which was very hard, nodular and vascular. There was a history of long-standing nasal obstruction.

Syphilitic Destruction of the Maxillary Bone.

Dr. Quinlan also presented a case showing an enormous destruction of the maxillary bone by tertiary syphilis. This woman had been in the City Hospital and was treated for gumatous ulceration of alveolar process of upper jaw. To-day the ant-
rum and nares are visible through the ledge of tissue that has followed the slough.

Dr. E. Mayer said that a case of fibroma of the nasopharynx had presented at his clinic two days previously, and the diagnosis had been made by a rhinoscopic examination. The growth, which was about the size of a bird's egg, was easily removed with the snare. Malignant disease was not usually found in the very young, and this should be remembered in connection with the diagnosis.

Ulceration of the Mouth due to the Fusiform Bacillus.

Dr. A. B. Duel presented a young man who had come to the hospital five weeks ago with the idea of having the septum straightened. Attention was directed to an ulceration in the corner of the mouth, and another dirty gray ulceration on the left tonsil. There was no history of syphilis, but the conclusion was reached that it was a tertiary syphilitic lesion. The man was put upon large doses of iodide, but he did not improve. It had then occurred to him that this ulceration might be due to the fusiform bacilli of this form. Peroxide of hydrogen was then used locally, and the case was rapidly improving.

Dr. C. G. Coakley said that he had recently met with one of these cases. There was no history of syphilis, and the case improved very rapidly.

Correction of Saddleback Nose by Subcutaneous Injection of Paraffin.

Dr. Harmon Smith presented three cases to illustrate the effect of subcutaneous injections of paraffin for the correction of nasal deformities. The speaker said that the use of paraffin for the correction of nasal deformities had been tried by Gersumy, of Vienna, in 1900. He had met with only two reports of such cases in this country. Dr. Smith said that he had begun his work in this field by experiments on the cadaver, having raised the temperature of the tissues to the normal temperature of the human body. It was found that the paraffin spread itself out over the nose, forming a perfect cast of the nasal bones beneath. An experiment upon a rabbit showed that the paraffin was inert even in the peritoneal cavity, and no reaction resulted. There was a tendency towards encapsulation on the part of nasal tissues. In his clinic work the method adopted had been to inject five minims of a four per cent solution of cocaine prior to the injection of the paraffin. A paraffin having a melting point of 110° F. was used. After sterilization it was again melted and the bubbles of air allowed to escape, and then an aspirating syringe with a large needle was filled with the paraffin, and submerged in hot sterile water until ready to make the injection. The point of the needle was carried into the tissues well beyond the point of greatest deformity. It was found that the paraffin remained plastic for about half a minute, and during this time could be molded. The results in

the three cases presented, while not making a perfect nose, were nevertheless sufficiently good to encourage one to pursue this work.

Dr. W. F. Chappell said that hitherto he had been greatly disappointed with the results he had obtained in such cases from other methods of treatment, and he could confirm what had been said about the very marked improvement resulting from the injection of the paraffin. He had himself used it in one private patient with satisfactory result.

Successful Operation on a Unilateral Isolated Empyema of the Sphenoidal Sinus.

Dr. Jonathan Wright said that about six weeks ago a patient had come to him with severe boring pain in the head. This was followed by delirium. With the finger in the nasopharynx and the patient under ether he had plunged into the sphenoidal sinus and evacuated stinking pus. With an instrument devised by Dr. Nichols, he had removed the turbinates. The delirium had continued for two or three weeks after this operation. An exploratory operation through the frontal sinus anterior and posterior ethmoidal cells was made because of this, but no more pus was discovered. The man was doing well now, although the delirium lasted two weeks after operation. The delirium was probably due to an inflammation of the meninges. The patient, in describing the pain in the head, said that it originated in the nose, but the accompanying gesture indicated a pain extending from the parietal region down to the nose. On first coming under observation there had been a foul smell from the nose. Dr. Wright said that in doing this operation for opening the sphenoidal sinus it was very important to make careful measurements, for, it should be remembered that the anterior wall of the sphenoidal sinus was exactly three inches from the front of the nose, and the posterior wall three and a half inches from this point.

Dr. Z. I. Leonard said that last August he had seen at the New York Eye and Ear Infirmary a woman of 65 years who gave a history of great pain in the upper and back part of the head. Examination showed the left nostril to be filled with a material resembling putty. It could only be dislodged by using the curette. Microscopical examination of this material showed it to be composed of detritus and pus cells. The sphenoidal sinus

was found to be the one involved. Its anterior portion was broken down and the sinus washed out, and the patient recovered.

Dr. J. W. Gleitsmann said that undoubtedly these sphenoidal cases were quite rare, and Dr. Wright was to be congratulated on his success in operating upon this sinus. In a former discussion he had contended that the sinus was usually $3\frac{1}{2}$ inches from the front of the nose, and he had had one case in which it was $3\frac{3}{4}$ inches distant from this point. When the anterior wall was intact some force must be used. Without due care it was easy to break into the cranial cavity.

Intranasal Tumor.

Dr. E. Mayer presented a man who had come to him four weeks previously with an enormous intranasal growth, which was diagnosticated as a myxosarcoma. The whole roof of the superior-maxilla was absorbed and the nasal bones on one side. He had done first a tracheotomy, packed the posterior nares and had then split the lip and laid it over on the cheek, thus gaining access to the growth. The latter, after removal, weighed 117 gm. Microscopical examination showed it to be an adenoma of the papilliform variety. The hemorrhage was kept thoroughly under control. The patient had had ordinary polypi for twenty-five years, and within the last year and a half the tumor had grown rapidly.

Dr. Wright said that from the history of the case he would say that there was not the slightest resemblance to papilloma of the nose, and a glance through the microscope made him feel quite positive that it was an adenoma or an adenosarcoma.

Dr. Simpson said that he had seen the patient before the operation, and had been impressed with the fact that the hard palate bulged markedly into the mouth. Since the removal of the growth the hard palate had receded and had become flat.

A Case of Bilateral Frontal Sinusitis.

Dr. Francis J. Quinlan presented this case. The man had suffered excruciating pain, and was almost desperate for the past five or six years at times. At the operation the sinuses were found to be very large, and the diseased tissues appeared to be ranged in layers. In this, as in other recent cases, he had introduced no gauze. There was very little bleeding, and ever since the operation the man has been comfortable, and is gaining flesh.

His vision had likewise been clearer than it has been for four or five years.

The last case is one of epithertum of tongue and floor of mouth, where Dumais' solution has been injected daily in the floor of the mouth with marked improvement in the appearance of the growth and the general condition of patient. This patient was seen by Section six months ago. This method of submucous injection has been practiced by me for the past three years in these inoperable cancers.

Tracheal Tumor Removed Per Vias Naturales.

Dr. J. W. Gleitsmann presented the tumor and the patient from whom it had been removed. Microscopical examination showed the tumor to be a sarcoma. The patient was 52 years of age, and had not been sick previously. He had been first seen on December 19, 1901. For four months previously he had had hoarseness and some difficulty in breathing for one month. Examination showed a tumor below the vocal cords, firmly adherent to the anterior wall of the trachea. The tumor was successfully removed through the natural passages with an extraordinary long curve of Schech's galvano cautery snare and the speaker's irido-platinum wire. The operation was not followed by any reaction. It was reassuring to know that a tumor situated at this depth could be removed in toto by intralaryngeal methods.

Dr. Fridenberg said that he had had happened to be in his wards at the time of Dr. Gleitmann's examination and operation, and had been surprised at the skill with which the snare had been applied and also at the slowness with which the tumor was removed. There was no hemorrhage, and no undue canterization.

A Case of Intracheal Colloid Struma—Operation—Recovery.

Dr. Clement F. Theisen, of Albany, N. Y., reported this case, which had been successfully operated upon. He commented upon the great rarity of this form of intratracheal growth, there being only nine on record. The patient was a woman of 32, who had enjoyed good health previously, and who had borne two healthy children. He had seen her for the first time in November, 1901, and found her pregnant and suffering greatly from dyspnea. There was a goitre of moderate size, and examination showed an inspiratory thrill, which seemed to be pathognomonic of high tracheal

stenosis. Laryngoscopic examination showed a tumor attached to the posterior and left lateral walls of the trachea. It was seen during deep inspiration. Her condition growing worse, the operation had been done on November 16, an incision being made from the thyroid cartilage nearly to the episternal notch. In cutting into the trachea a small incision was accidentally made into the tumor, which caused a troublesome hemorrhage. This was finally checked by the use of a sterile solution of adrenalin chloride. The tumor was found to be a part of the tracheal wall, and as much as possible of the growth was removed, the adrenalin being used freely because of the troublesome bleeding. The patient's condition was satisfactory for three days after operation, but on the fourth day she developed a double pneumonia, and for nearly two weeks the condition of the heart was very bad, and strychnia and nitroglycerine were administered frequently and in large doses. She was discharged from the hospital in excellent condition on the twenty-ninth day after operation, still wearing the tracheotomy tube. Dr. George Blumer examined the fragments of the growth, and found it to be made up of thyroid tissue containing a large quantity of colloid matter. The histological diagnosis was colloid struma. There were two theories as to the origin of this form of tumor. One was the embryonic theory, and this supposed that a lobule had remained in the trachea since the fetal life and developed during adult life. Another theory was that there was a direct extension of an enlarged thyroid gland, but in such cases the fetal gland must be united with the perichondrium of the cartilage and the interstitial membranes. In almost all of the reported cases the location of the growth had been characteristic, and they had been described early in life. The author's case was the second only in which the struma was confined to the trachea, and the only one occurring during pregnancy. It was probable that the pregnancy had had a great deal to do with the rapid increase in the size of the growth. The prognosis was, on the whole, favorable. When the growth was large enough to seriously interfere with respiration, a laryngo-tracheotomy should be done as soon as possible.

Dr. Theisen said that he had referred merely to the cases of intratracheal struma in which it could be proved that there was a connection between the goitre externally and the struma internally. In the majority of the cases to which he had referred this had

existed. The cases quoted by Dr. Douglas were not entirely analogous.

Voice Production and Its Pathological Obstructions.

Dr. Joseph Kenefick was the author of this paper. He said that it was not uncommon to find a student, after years of study and expense, fail in securing a good voice culture because of a long-standing obstruction in the upper air passages. Tone production might be considered under four heads, viz.: (1) Respiration; (2) phonation; (3) resonance, and (4) innervation or the central influences which control all the rest. While it was true that obstructions in the upper air passages might exist for a long time with affecting the laryngeal structures, they were usually the forerunner of pathological changes in the larynx. Misuse or over-use of the voice was likely to result in paresis of the vocal bands, or to the development of singers' nodules. Hypertrophy of the lingual tonsil was a frequent and grave obstacle to the culture of the voice. It might be complicated by the presence of varix. It belonged to the lymphoid diathesis, and was often associated with constipation and a general lack of tone of the system. The proper placing of tone was most important and difficult, and only came to most singers after long practice. Hypertrophy of the faucial tonsil was one of the most common and prominent of the pathological conditions interfering with proper resonance, and yet some would have us believe that the removal of the enlarged tonsils injures the voice. The turbinal enlargements and their effects were not so generally recognized. Patency of the nose was absolutely necessary for proper tone placing. The author's conclusions were: (1) That the profession of teaching voice culture should be confined to those having proper preparation for their work; (2) that students should begin this work much earlier than customary, and (3) that before taking up voice cultivation the candidate should have the vocal apparatus thoroughly examined.

Dr. Thomas J. Harris said that almost anyone who had removed many tonsils must have met with cases in which the voice had been improved by the extirpation of the tonsils. Personally, he had never seen any ill effects to the voice from such removal, yet a London laryngologist had just reported two or three cases in his own experience in which the voice had been injured in this way.

Dr. Gleitsmann said that he had been compelled to decide this question in the case of a singer of international reputation. This man suffered from occasional enlargement of the tonsils. He had advised slitting the tonsil on these occasions, and would have been glad to remove them, but the singer was actively engaged in his professional work and absolutely refused to have it done because a well known authority in Europe had assured him that the removal of the tonsils would injure his voice. Personally, he would be cautious about expressing an opinion on this point in the case of a tenor or a high soprano. Even a medium-sized lingual hypertrophy exerted a bad effect upon the voice.

Dr. T. Passmore Berens said that if the voice of a young singer were changed by the removal of the tonsil this change could be offset by proper training. It was quite different, however, in the case of singers in more advanced life. He would warn against the removal en masse of the tonsils or adenoids in singers well advanced in their career, and also well on in life. He was glad that renewed attention had been directed to the lingual tonsil, for, we were prone to look over or overlook the lingual tonsil, and examine the vocal cords.

Dr. N. L. Wilson, of Elizabeth, said that his experience was that the voice was never injured by the removal of the tonsils. The voice in cases of enlarged tonsils was usually faulty, and after the removal of the tonsils it might be necessary to train the voice to a different mode of placing the tones.

Dr. Mayer said it was remarkable how many persons had a good singing voice despite the presence of a great deal of nasal obstruction. He had in mind two such cases. In one of them there was a large exostosis and enchondrosis springing from the cartilaginous and bony septum, while in the other there was complete stoppage of the affected side from a bony plate, and yet both sang well and were not aware of the obstruction. After operation the ease and comfort they experienced was promptly noticed.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY.

SEVENTH ANNUAL MEETING.

Held in New York, May 23, 24, and 25, 1901.

(Proceedings continued from page 54.)

Tympanic Vertigo Due to Obstruction of the Eustachian Tube.

Dr. William P. Brandegee, of New York City, read this paper. He said that vertigo could be divided into four varieties, viz.: (1) Vertigo incident to diseases of the heart; (2) vertigo complicating diseases of the stomach and intestinal tract; (3) vertigo associated with diseases of the eye, and (4) vertigo dependent upon diseases of the ear. Vertigo in connection with ear disease is almost always associated with tinnitus. When there was only moderate deafness, vertigo was not usually complained of. The lower tone limit was nearly always raised. Vertigo due to aural disorder was either subjective or objective, and the vertigo varied from slight giddiness to an inability to stand up or walk. The vertigo was usually referred to the side on which the lesion exists. The first effort should be to strike at the root of the disorder by restoring the lumen of the Eustachian tube. The most rapid and effective method of accomplishing this, in his opinion, was by electrolysis. By the aid of the current from the negative pole the bougie could be readily passed, whereas with the ordinary bougie undue force would be required. The method caused a minimum amount of pain and produced the minimum amount of trauma, and allowed of the utmost delicacy of manipulation. The smallest bougie with a tip 1 mm. in diameter was preferred for the first treatment, and a current of from 25 to 40 volts, and from two to five milliamperes should be used. Electrolysis, and not cauterization, was desired. The negative pole should be attached to the bougie, and the positive electrode held in the hand. Before passing the bougie the mouth of the Eustachian tube should be thoroughly anesthetized with cocain. To be effective the tip of the bougie should pass

within the tympanic cavity, and inflation should not be done for forty-eight hours.

Toxic Rhinitis.

Dr. Charles P. Grayson, of Philadelphia, was the author of this paper. He expressed the belief that nine-tenths of the cases of rhinitis were the result, not of exposure to cold, as often stated, but rather to a toxæmia—in other words, that rarely, if ever, could it be said that a person whose metabolic processes are normal can “take cold.” He was inclined to believe that wet dinners rather than wet feet, were responsible for many cases of acute rhinitis. The people who are the greatest sufferers from periodical rhinitis are those who are indulgent at the table, or who will not take that amount of exercise which might make amends for errors at the table. The local treatment of such attacks must be but palliative, and is of small moment. For these reasons he strongly condemned the now very prevalent custom of prescribing “rhinitis” tablets, composed of opium, belladonna and aconite. It was far better to prescribe horseback or other exercise, followed by a cool bath and a rub down than the usual coddling treatment for colds.

Immunization in Hay Fever.—A Report of Two Years' Experience.

Dr. H. Holbrook Curtis, of New York City, read this paper, which was a supplementary report to what he had presented on this subject before the last meeting of the American Medical Association. He had begun his experiments in this field by administering hypodermically a sterilized infusion of roses. After two weeks of this treatment the lady had been able to stand the effect of the odor of roses. He had then treated this neurotic individual by similar preparations of violets and lilies, and with equally good result. He had next noted that other flowers than these could be included in a bouquet without causing the distress formerly experienced. He had then determined to supply this therapeutic principle to hay fever, and, as a result, Fraser & Co., apothecaries of New York City, had placed on the market in August, 1900, a preparation of the fluid extract of ragweed with aromatics which was sold under the name of “Liquor ambrosio.” With each bottle a printed blank had been sent out with a request for the co-operation of those using the remedy in systematically studying it. At the end of four weeks, after sending it out, reports had been re-

ceived of 18 complete recoveries, of four cases showing considerable improvement, and of 12 cases in which the result had been negative. About 3,000 bottles had been sent out. Many letters were read to show what had been the results, both favorable and otherwise. After studying these reports, and considering his own experience with about 100 cases, he had come to the conclusion that in those cases of hay fever due entirely to the ragweed immunization could be secured in about 60 per cent of the cases, but that in cases of mixed infection, with a preponderance of asthmatic symptoms, a nasal spray of suprarenal extract, or of adrenalin should be employed.

Dr. H. L. Wagner said that of late the studies of immunization had become most interesting. Having heard of Dr. Curtis' experiments, he had undertaken the analysis of various extracts of flowers with the object of ascertaining what effect they might have on the serum of the blood. It seemed that the so-called glycosides of the vegetable kingdom form certain chemical combinations with the albuminoid products, then produce immunization of the blood. He did not refer to the serum albumin or the serum globulin of the blood. He fully agreed with Dr. Grayson that cases of toxic rhinitis often result from the formation of certain acid, produced by fermentation. Just as some individuals were peculiarly sensitive to such toxins in the blood, and exhibited this idiosyncrasy by the development of rhinitis, so persons might be peculiarly sensitive to the glycosides of flowers. He intended to continue his study of this subject, and hoped to report upon it in a year or two. He had had patients develop symptoms of hay fever after riding behind a horse, whether or not the animal had been well groomed. The peculiar smell of the horse is due to hippuric acid, and hence it had occurred to him to try injections of horse urine. Instead of this, however, he had decided, for various reasons, to employ pure hippuric acid. He had used a solution of hippuric acid of the strength of 3 to 3.5 per cent. One or two cubic centimetres were injected every third or fourth day. One of the individuals thus experimented on, after eight or ten weeks of the treatment, was able to drive without developing the symptoms formerly observed. The speaker said it had occurred to him that this result might possibly have been dependent upon suggestion, yet it was not inconceivable that the glycosides of flowers might combine with the side chains of substances in the blood. He thought the subject was worthy of thoughtful and extended study.

Dr. E. L. Vansant, of Philadelphia, said that this subject of immunization was certainly most fascinating. The use of cow pox against small-pox and of antitoxin against diphtheria were notable examples of achievements in this field. Hay fever was certainly more or less of a neurosis, and he was inclined to think that the idea of being made immune to a disease from which one had been suffering from year to year, would have a profound effect on the nervous system, and this would account for some of the beneficial results reported. The nearest approach to the action of a remedy similar to that recommended by Dr. Curtis would be that of quinine in malarial fever. That had a certain power to make one immune to malarial infection, but there the infection was a specific one, and the action of quinine appeared to be a specific one upon the malarial plasmodium in the blood. He was of the opinion that numerous examinations of the blood in cases of hay fever might bring out valuable information.

Dr. Price Brown said that Dr. Curtis deserved the thanks of the members for having so persistently followed out one line of investigation. One point in that investigation, however, had been left out, even so far as the title of the paper itself—"hay fever." Apparently he had taken no cognizance of the effect of hay. Dr. Brown said that he had known men to develop attacks of hay fever after having been engaged in throwing pure timothy hay. Mention was made of a man who had sneezed more than one hundred times simply because he had thrown out one load of hay.

Dr. F. H. Koyle, of Hornellsville, N. Y., said that he had had one case of a woman who had never suffered from symptoms of hay fever except when riding behind a horse.

Dr. L. F. Page said that the reported results from treatment with the tincture of ragweed are certainly encouraging. He had several patients who had been unpleasantly affected by driving behind a horse, and he had come to the conclusion that this was due to the hair of the animal having become saturated with the pollen of various plants, rather than from any peculiar emanation from the animal. For several years he had secured good results in the treatment of hay fever by restoring proper drainage, and as nearly as possible, normal conditions of the mucous membrane, together with proper attention to the eliminating action of the skin and bowels. Various abnormalities of the nose by causing pres-

sure irritation in persons predisposed to hay fever was often responsible for the occurrence of this disorder. He knew of several cases that had been entirely relieved years after all of the abnormalities of the nasal cavities had been removed, the disturbed nerve centers had had time to regain normal resistance.

Dr. N. L. Wilson said that from the letters read by Dr. Curtis, he had been persuaded to give the remedy another trial. He had used it in eight cases last year, and the only results noted had been the production of nausea and an increase of the discomfort of the patient. He had been disposed to discard this treatment, not only because of these clinical results, but because one of his patients always had an attack after driving behind a horse, and another patient developed hay fever after riding a bicycle on a dusty road. Surely Dr. Curtis could not be expected to add the fluid extract of dust to his preparation.

Dr. C. F. McGahan said that his summer practice for many years had been in the home of hay fever; in later years they had had light attacks, usually after the prevailing wind had been from the southwest. Several years ago when assistant to Dr. Geddings, five thousand letters had been sent out to the laity with the idea of securing information about hay fever, but the result was of but little value. In his locality these hay fever patients do not drive, except after a rain, for they always develop symptoms of hay fever. He also knew of a gentleman who had a stable about as clean as one's kitchen, and whose horses were beautifully groomed, and yet he also had hay fever after driving behind the horse in the hay fever season. It used to be said that the ragweed does not grow in the mountains, and hence persons are exempt from hay fever there, but this was not true because the ragweed had been found in these regions. Even the planting of corn had been deprecated by some hay fever sufferers, lest it might ruin this region as a haven for sufferers from this disease.

Dr. J. A. Stucky, of Lexington, Ky., said that he had tried Dr. Curtis' preparation, and had forwarded to him the results. In three cases the patients thought they were benefited, but they remarked that the ragweed was less virulent last season. In eight cases he had been unable to see any appreciable result, while he had obtained considerable relief from the use of a solution of suprarenal extract and chlorentone, one part with seven parts of an alkaline solution, either Dobell's or Seiler's solution.

Dr. T. J. Harris said that only that very day he had been talking with a patient who always had a rose cold on May 20, which disappeared on July 3d. He had given this woman no treatment directed to the nose, but had endeavored to correct the high acidity of the urine and improve the condition of her stomach. Under such treatment at one time, she had gone the whole year without any rose cold. The latter was now five days overdue, so that it was possible that the treatment mentioned would again secure for her immunity this year.

Dr. E. E. Holt said that a classmate of his had been unable to ride behind a horse at any time in the year, although he had tried various methods of grooming and cleaning the horse.

Dr. Curtis, in closing, said that in a previous communication he had cited a case in which a man had been unable to live in London since twelve years of age. He could not pass a horse in the street without having a dreadful coryza. Many specialists in London had experimented with him. It had been found that he could ride behind a horse that had been vaselined, and would not develop any symptoms until after about one hour. Persons who are sensitive to the emanations from the horse develop the symptoms when riding in a sleigh, thus eliminating the question of dust. Some persons are sensitive to emanations from elephants, cats and mice. A rose cold occurs even when there are no roses about, and is the result of an erectile tumefaction. In the later stages a true oedema supervened. He believed the most important thing in the treatment of hay fever was the elimination of uric acid, and that this was proved by the effect of low diet. He knew several opera singers whose vocal cords were so sensitive to the emanations that if exposed to such emanations in a room they would be unable to sing. Enough encouragement had been found in the reports received by Fraser & Company to lead them to manufacture 50,000 bottles for this season's consumption. He was of the opinion that the fluid extract was the more efficient preparation.

Management of Acute Otitis Media.

Dr. F. L. Jack, of Boston, Mass., read this paper. He said that the object of treatment in the first stage was to keep open the tube. In children, the Pollitzer bag should be used; in adults, the Eustachian catheter. If the inflation were done too energetical-

ly the inflammation would be increased. The pain was best relieved by dry heat; poultices could not be too strongly condemned. Of instillations, oily mixtures were the least objectionable. In the second stage there were a collection of fluid in the middle ear and a bulging of the drum membrane. A free incision of the drum was of the greatest importance, and not only gave prompt relief, but tended to prevent mastoid complications. Many cases of catarrhal deafness were made worse by a neglect to free the middle ear of fluid. The opening should be made at the point of greatest bulging, and the incision should be free. He thought children suffered more from giving a general anesthetic than from incision without it; in adults, ether, chloroform or even nitrous oxide might be used. The ear should be inflated at intervals until hearing was restored.

Early Treatment of Mastoiditis.—By Dr. Charles W. Richardson, Washington, D. C.

This paper appeared in extenso in *THE LARYNGOSCOPE*, Vol. IX., No. 1, p. 57.

DISCUSSION.

Dr. Edward B. Dench said that he was in almost perfect accord with what had been said by the readers of these papers. He was very glad that Dr. Jack approved of inflation in the very early stages. He was certain that in a number of cases he had seen an acute inflammatory process within the tympanum aborted by the gentle use of the Eustachian catheter to restore the balance, as it were, of the drum membrane. In this congestive stage the proper use of the catheter accomplishes very much what a supporting bandage does in the inflamed limb, i. e., it restores the circulation to the normal condition. If the infection were not too virulent, the disease might not go beyond the stage of congestion. He preferred the catheter to the Pollitzer bag, except in very young children, where it was practically impossible to use the catheter. He had had no experience with adrenalin, but he knew that the application of a solution of nitrate of silver, of a strength varying from ten to forty grains to the ounce, is efficacious in many of these cases. Dry heat was also of great value; the best way to spoil a good ear was to poultice it. With reference to the use of oils, he was inclined to think that oils do harm by furnishing an excellent nidus for the development of the aspergillus. In the external canal the absence

of light, with the presence of moisture and heat, added to the other favorable conditions for the development of such an organism. The result of the instillation of oils was the development of moulds and streptococci. Subsequently it might become necessary to incise the membrane, and under such circumstances it would be found exceedingly difficult to sterilize the canal. As to the advisability of incising the drum membrane when there was no bulging, the speaker said that he believed that sometimes the incision into the drum should be made even when there was no effused fluid. This was particularly true of the cases starting in with acute pain. His experience with wick drains had not been favorable. His plan was to use irrigation immediately after the incision. Theoretically sterile water was all right, but practically it seemed to him better to use a solution which was mildly antiseptic. Where numerous streptococci were present it seemed especially desirable to diminish the virulence of the germs in the canal by such use of an antiseptic. He preferred bichloride solution, 1 to 3,000 or 5,000. He believed in early incision, rest in bed, and the use of cold as a routine treatment, but by this he meant that the case should be under a surgeon's personal observation from its inception. If there were any evidence of mastoid involvement he was strongly of the opinion that in most cases it was a little dangerous to make use of cold, because of the tendency of such an application to mask the symptoms. He could not agree with Dr. Richardson that the cold should be left on as long as improvement was observed, for, he believed, if cold did not abort an inflammatory process within forty-eight hours it would not act as an abortive measure, though it might relieve the symptoms. If the coil were left on longer the inflammatory process might be arrested in the superficial cells, and yet be progressing in the deeper cells, and such treatment might then result in intracranial involvement. Two cases had made him hesitate to use cold. One was a man who had come into the hospital with a pneumonia, and for this reason the mastoid operation had been postponed and cold used. He had been brought to the hospital about six weeks later in coma and with choked disk. He had been promptly operated upon, and a brain abscess evacuated, and the man had recovered. In the case of a young girl, cold had been left on for three or four days, and all of the symptoms had disappeared. The boy had re-

turned to the hospital about two months later with an abscess in the posterior fossa, and a very extensive destruction of the mastoid process. Infection had taken place through the external surface of the skull, and an abscess had developed between the dura and the bone as a result of that absorption. He believed that the otologist in doubtful cases was just as much warranted in doing an exploratory operation on the mastoid as the general surgeon was justified in doing an exploratory operation in other regions. Such a procedure secures drainage posteriorly, diminishes the risk of serious impairment of hearing, saves the patient from intracranial complications, and shortens the period of convalescence.

Dr. J. F. McKernon, of New York City, said that two years ago he had read a paper before this society in which he had advocated cold in certain stages of acute mastoiditis, yet the impression had gone forth that he had advised it in all stages. When a case came under observation with beginning tenderness of the mastoid process he advocated free incision of the drum membrane, absolute rest in bed, fluid diet, free purgation and the application of the Leiter coil over the mastoid for twenty-four hours. If, after this time there was marked tenderness the coil should be removed and the case watched for twenty-four or forty-eight hours. If, on the other hand, the tenderness had diminished, the coil should be left off and the case watched. There was no use, of course, in applying the ice coil if pus were already present. In acute mastoiditis with mastoid tenderness, and a condition of congestion only, the application of cold would, in the large majority of cases, abort the process. Where the predominating infection was streptococcal, he was very skeptical as to any measure proving abortive. The discharge from the external meatus should be examined bacteriologically in all of these cases. He thought the time would come when otologists would practice the exploratory mastoid operation advocated by Dr. Dench. In an uncomplicated mastoiditis it was certainly a perfectly safe operation, and he was glad that this procedure had been so earnestly advocated.

Dr. T. P. Berens said that the treatment of inflammation of the middle ear should be along the lines of free drainage and cleanliness. Irrigation should be with solutions as hot as can be borne. The Eustachian tube should be opened, and this pro-

cedure could be most easily accomplished by the use of adrenalin through the catheter. He believed that heat accomplished much in the early stages of this affection. Confinement to bed was an important factor in cutting short the attack. The nose and pharynx should be kept clean, and internal medication should be resorted to. In the later stages, where there was considerable formation of pus, he found peroxide of hydrogen useful, but it should be added to the hot irrigation and dry cleansing. The effects of extreme cold and extreme heat were practically the same, and as ice masks the symptoms where heat does not, he preferred heat. Many acute cases in which one expects to find pus in the mastoid antrum yield to the treatment outlined together with the use of hot poultices. This treatment should be persisted in for forty-eight hours, if need be, so long as the patient is comparatively comfortable and there are no urgent symptoms. He had recently had a case completely recover, the mastoid symptoms disappearing after five days of careful nursing. In the removal of the jugular vein one often finds a thin broad sterno-mastoid muscle. By prolonging the incision and splitting this muscle the vein could be more easily laid bare. It was customary to split the lateral sinus and pack it with gauze, his own practice was to split the sinus the whole length of the diseased area, and a little beyond, and then enucleate the split edges, leaving practically an open wound which could be easily dressed, and which could not possibly contain any pus.

Dr. T. R. Chambers exhibited the ear douche which he employs in connection with water having a temperature of 125° F. He believes that many cases of impending mastoiditis have been cured by this treatment which would never have been cured by any of the methods of treatment already described. He said that he had read a paper on this subject about one year ago, and as a result, had received some inquiries regarding this douche. The instrument is made by the Davidson Rubber Company of Boston. It may be sterilized, taken apart, will fit any ear, and is indestructible. With it water at a temperature of 125° F. may be used without burning the fingers holding the instrument. It was his rule, in every case, to make a culture from the discharge as it exudes from the middle ear.

Dr. E. E. Holt said that in the discussion of this subject many years ago, Dr. Agnew had laid stress upon the importance

of having the patient recline at an angle of 45° . This was a point of some importance, as many patients are comfortable in that position, but suffer a good deal if lying flat and on the back. He had long ago learned from experience that many cases of earache could be relieved by introducing into the auditory canal a piece of cotton, moistened with spirits of camphor, and having in its centre some red pepper. He felt sure that what had been said in previous meetings of specialists about the use of cold in inflammation of the middle ear, had done much harm by encouraging general practitioners to use it indiscriminately, and without regard to the special stage in which it was alone appropriate. It was often difficult to determine whether a mastoiditis was superficial or deep.

Dr. Price Brown cited a case in which acute pain in the middle ear had developed in a lady after exposure to cold. He had applied dry heat, and within thirty-six hours she had developed mastoid tenderness. Her temperature at that time had been 101° F. He had then made a very free incision into the drum, evacuating seropurulent material. At the same time he had applied a fly blister. He believed in dry treatment, and hence he had not resorted to irrigation, fearing that it would carry infectious matter into the deeper parts. The following day the temperature had been 99° , the discharge had lasted about five days, and the further recovery had been uneventful.

Dr. Sargent F. Snow said he was glad to hear Dr. Richardson use the expression, "the persistent application of cold as long as it seems to be doing good," for, experience had shown him that a little latitude could be given to the forty-eight hour rule, particularly if the case were holding its own. The operation for opening the mastoid was undoubtedly one which was frequently necessary, and of great benefit, but nature, in her efforts to ward off extension of inflammation throws out a protecting wall. Now, if one opens and clears out a mastoid, which is the seat of only slight inflammation and softening, he is very liable to break down this protecting wall, favoring infection of adjacent parts. He believed one should secure free drainage of the mastoid. If on opening the mastoid, only slight softening were found, it seemed to him sufficient to maintain free drainage, and not disturb the walls. In many cases free incision of the ear drum and of the posterior superior wall was sufficient to give all the drainage required. Some-

times the posterior superior would be found bulging again after the first incision. If this occurred, it should be again incised.

Dr. Wendell C. Phillips said that he understood Dr. Jack and Dr. Dench to advocate the use of the catheter in acute catarrh of the middle ear. The use of the catheter or inflation of any form in acute inflammatory processes of the middle ear was not unattended by danger. He would hesitate to do this in any cases in which there was an infective process going on in the nose or in the nasopharynx, because of the danger of carrying some of the infectious material into the Eustachian tube. He referred especially to grip cases. Whether the inflammation was catarrhal or suppurative in these cases, the less one had to do with the Eustachian orifice the better for the patient. He could imagine some cases of catarrhal inflammation where the treatment mentioned by these gentlemen would be safe. He had almost come to the conclusion that in acute inflammation of the mastoid cells, whether or not the ice coil were used, or poultices were used, little influence was exerted upon the process going on in the mastoid cells, and he had almost come to the conclusion that once a mastoid, always a mastoid, and that but little could be done in the way of prevention. We should strictly define the varieties of mastoid disease. There was one type which no treatment, seemed to him to reach effectively, namely, the grip cases in which streptococci are present. This was the result of his personal experience. On the other hand, if there were mastoid inflammation without these germs—in other words, a congestion or a catarrhal inflammation—the case might be influenced by treatment. Two symptoms and one condition seemed to him to mark the positiveness of the case, i. e., prolonged tenderness over the antrum, bulging of the attic and the presence of streptococci in the pus. The pus should be examined microscopically in every case. Theoretically, the ice coil was better than hot applications. Poultices had been both condemned and praised in this discussion. In actual practice it seemed to him that the hot poultice certainly had a very beneficial effect, though admittedly bad in theory. In any case, neither cold nor hot applications should be continued for any length of time. In the past six months in a rather large service he had taken off the ice coil at the end of twenty-four hours, and had not reapplied it for fear that the longer application would mask

the symptoms. Some physicians made it a routine practice to attempt to abort a mastoid case by the use of the ice coil, yet he would insist that there were many cases which were undoubtedly operative from the time they first came under observation. He could not see how a blister could be of benefit whatever in such cases.

Dr. J. F. McCaw said that his experience coincided entirely with that of Dr. Dench and Dr. Phillips. He believed that cold in these cases is entirely out of place. Mention was made of a case seen by him some time ago, where consent to operation had been withheld for the time, and the patient had been allowed up and around. He had finally come to the speaker's office with very little tenderness, but a free purulent discharge from the middle ear. Immediate interference had been advised, and a typical mastoid operation had been done the next morning. The mastoid cells were found converted into a carious mass, the wall of the sigmoid was completely carious and covered with pus, yet this patient had gone around the previous afternoon attending to his occupation of civil engineer. The case emphasized the treacherous nature of these cases.

Dr. H. L. Wagner said that in almost all cases there was a mixed infection. When there was at first a pneumococcus infection there would surely be a mixed infection in the course of a few days. If there was a pure pneumococcus infection, the prognosis was good; if the infection were mixed, and especially if streptococci were present, one should be guarded in the prognosis. This form of infection should be regarded as very serious, though he did not think that all of them really needed operation. We should not be satisfied with making an examination of the pus once only, but these examinations should be repeated from time to time, until satisfied with the improvement. Clinical intelligence should, however, be superior to the results of these important examinations.

Dr. R. C. Myles thought that progress was being made as to the importance of understanding the physics and chemistry of inflammation of the middle ear. Wherever free drainage occurred, an operation was rarely required. When pressure caused sloughing of bony as well as soft tissues, and led to necrosis, an operation would probably be required. He did not think quite enough attention was paid to the details of securing this drainage. For

instance, the exact method of making the incision to relieve the tension in the mastoid cells was not generally stated, though Dr. Dach had made an effort in this direction. The membrane appears on inspection rather peculiar when an incision is required, and one was apt to be misled as to the exact location and extent of the incision. In some of his cases he had gone so far as to excise a portion of the drain membrane; in others, he had made a triangular incision. He had never felt that he had made too free an incision—indeed, the more extensive the incision the better had been the after results, other things being equal.

Dr. Richardson, in closing, said that he had supposed in his paper that the case was under observation from the very beginning. One derived a certain amount of intuition in connection with any work in which one has a large experience. Some cases at once indicate to the physician that an operation is required, and, of course, such cases should not be treated by the application of ice. He had had this spring a gentleman with double otitis media and streptococcal infection. The left ear went on to resolution, under the application of ice. Five days afterward, and after having applied cold for forty-eight hours, he had done a mastoid operation on the right ear. About the same time he had seen a case in which there had been very little tenderness, and a body temperature of 99° F. There were numerous streptococci in the discharge. The next day he had operated upon both mastoids, and had found extensive disease with an epidural abscess on one side. These cases were narrated to emphasize the necessity for the use of individual judgment. He had not said anything about ice masking the symptoms, only that one must be extremely careful about observing the symptoms while using the ice. He had seen as bad cases of pneumococcal infection as of streptococcal infection.

Lithaemic Pharyngitis.

Dr. J. A. Stucky, of Lexington, Ky., read this paper. He said that uric acid excites inflammatory reaction in mucous membrane. The excessive elimination of uric acid and the inability of the organs to comply with this demand caused it to be deposited in other organs. The local manifestation of the diathesis might not be confined to the larynx, but might make its appearance in the nasal and gastro-intestinal tract. The attack causes primarily

no lesion. It might be ushered in suddenly by sensation of fullness in the throat, and increased by swallowing. There was a constant desire to swallow, and the throat had a rigid feeling, and was hot and dry. There was only slight elevation of temperature. The redness and swelling were more marked behind the posterior pillar of the fauces, the other portions of the throat being very slightly congested. The uvula was often rigid, swollen and oedematous. In most cases there was a pricking and itching, as if a foreign body were present. It was sometimes an immediate precursor of articular rheumatism. Overindulgence in eating and drinking was often as much the determining cause as exposure to cold. Local treatment was only of value because of its psychological effect. Marked relief was afforded by an initial cleansing out of the nose and throat by a hot alkaline solution. The drugs indicated were those which increase the alkalinity of the blood. The salicylates combined with minute doses of pilocarpin should be given, and repeated until a free action of the skin had been secured. Daily exercise with restricted diet would give the most favorable and lasting results.

Dr. Vansant said that a few years ago he had drawn attention to the effect of indulgence of strawberries in causing pharyngitis. Quite a number of people could not indulge in this fruit without suffering from pharyngitis, and more or less inflammation of the tonsils.

The Mechanical Treatment of Nasal Synechia with Demonstration of an Appliance.

Dr. F. H. Koyle, of Hornellsville, N. Y., presented a paper with this title. After briefly referring to the instrumental treatment of existing synechial he exhibited a splint, and the material from which it is made, viz.: the modeling composition used by dentists in taking impressions for plates. A block of this is immersed in hot water until soft, and is then removed to a previously warmed wet surface, where it is kneaded or rolled out to the desired thinness. While still soft a strip is cut off and shaped into a splint, the sharp edges are smoothed down with the fingers. It is absolutely aseptic, light, non-absorbable, and superior in every way to rubber tissue, spunk, ivory or celluloid. He had been led to use this material, others having been found unsatisfactory, because of the impossibility of using anything other than an easily

moulded concave-convex splint in certain septum cases where operation was refused. Some of his patients had worn this splint material for three weeks without annoyance or unpleasant consequences.

Dr. Price Brown said that rubber was just as aseptic as the composition presented. It was true it had an odor, but it could be left in any length of time, and being compressible, it retained its position better. He had now a case that had worn a rubber splint without discomfort for four weeks, and he would leave it in position for five weeks more. The material was readily manipulated, using only a file and knife. He had used the rubber for three years, and has been greatly pleased with it.

Dr. Koyle said that he often introduced this composition into the nose while warm and soft. The peculiar advantage of the material was that it could be molded after having been placed in position.

Report on an Interesting Case of Aneurism of the Internal Carotid Artery.

Dr. Walter B. Johnson, of Paterson, N. J., made this report. The patient was an Italian boy of five years, first seen in consultation on March 15, 1900. Ten days previously the child had an inflammation of the throat, and a swelling in the region of the left tonsil, associated with the usual symptoms of peritonsillar inflammation. Possibly traumatism might have been inflicted that afternoon by an Italian midwife attempting to rupture the swelling with her finger. That evening Dr. Banta had been called and found bleeding from the ear. During a subsequent examination the child struggled violently, and there was sudden gush of blood from the left ear. At this time Dr. Johnson had been called in consultation. There was a tense swelling below the ear, which seemed to be limited by the fossa of the neck. No pulsation or aneurismal bruit could be detected. There was a dusky red, non-pulsating tumor in the left tonsillar region. A diagnosis of dissecting aneurism had been made. When examined on March 31 the tympanic membrane of the left ear had a large perforation, and rather thick serous fluid escaped from the junction of the auditory canal and tympanum. When next seen the statement was made that during an attack of enteritis and fever, the tumor had suddenly increased, and the child had become comatose. Another

physician had expressed the opinion that the tonsillar swelling was a malignant growth. The general opinion of a number of surgeons who saw the case was that this swelling was not an aneurism. On June 13 tracheotomy had been done by Dr. Johnson, and two exploratory punctures of the tumor had been made, and the remaining part of the left tonsil removed. The tumor mass was examined by a pathologist, and the opinion expressed that it was not carcinomatous or tubercular. The patient improved after this, with the exception of two attacks of bronchitis. On September 7th the child had been almost exsanguinated by a sudden and severe hemorrhage from the nose. Death occurred on September 10 from a second hemorrhage. No autopsy was permitted. Ligation of the carotid had been considered the precious spring, but, owing to the general opinion of the consulting surgeons that it was not an aneurism, this operation had not been attempted. The intention had been to do this operation if the tumor bled on exploratory puncture, but it had not done so.

Subarachnoid Injection of Cocain as a General Anæsthetic For Operations on the Head. By Dr. Redmond W. Payne of San Francisco.

This paper appeared in full in *THE LARYNGOSCOPE*, Vol. XI, No. 2, p. 117.

Dr. Otto J. Stein, of Chicago, said that the difficulty of sterilizing cocain had always constituted an important obstacle to its successful use in subarachnoid injections. Dr. Harold N. Moyer had done away with all this difficulty by substituting eucain. This is readily sterilized by boiling, and, so far as he knew, had produced equally good anesthetic effects when used in 4 per cent solution.

Dr. Payne replied that eucain had not been found to possess the reliable anesthetic properties of cocain.

Papillomatous Growths of the Soft Palate. By Dr. Wm. F. Dudley, of Brooklyn.

This paper appeared in full in *THE LARYNGOSCOPE*, Vol. XI, No. 2, p. 123.

Variation in the Technique of Septum Operations. By Dr. Stephen H. Lutz of Brooklyn.

This paper appeared in full in *THE LARYNGOSCOPE*, Vol. XI, No. 2, p. 126.

Dr. C. W. Richardson commended the author for this practical suggestion.

Dr. T. R. Chambers said that he practiced the Gleason operation, and in that no breaking was required.

Multiple Cerebellar Abscess ; Sigmoid Sinus Thrombosis.

Dr. J. E. Sheppard, of Brooklyn, N. Y., presented a cerebellum and dura showing a multiple cerebellar abscess and a sinus thrombosis. The specimen had been taken from a man, thirty-seven years of age, who had been admitted to the Brooklyn Hospital on April 19, 1901. About four months previously he had been hit in the frontal region with a pitch-fork. One month later he had begun to have pain in the right ear, and shortly afterward a discharge of pus from this ear. For about one month he had had headache, especially on the right side, and, according to the patient, he had had a swelling back of the ear. Examination showed hearing to be impaired; there was a moderate increase in the number of white blood cells; the temperature under the tongue was between 97° and 98° F., and in the rectum 99° F., the pulse ranged from 58° to 72°. At the operation the mastoid cells were found obliterated. On probing the sinus there was an escape of about half a drachm of pus containing streptococci. There had not been a single symptom of sinus disease. Three days later a trocar and canula had been plunged into the cerebellum, and had withdrawn two or three drachms of pus containing streptococci. This had resulted in temporary improvement. Two days afterward the patient died suddenly of respiratory failure. In the anterior part of the right half of the cerebellum were two abscesses, the anterior one having been opened. The right lateral sinus was entirely, and the longitudinal sinus partly obliterated by contained organized blood clot.

Simple Operations on the Inferior Turbinate in Place of Cauterization.

Dr. John F. Woodward, of Norfolk, Va., was the author of this paper. He used the cautery in the first stages of hypertrophy only. The complete removal of the inferior turbinate was seldom necessary. Our object should be to secure the greatest amount of air space with the least destruction of tissue. He makes use of scissors, having short cutting blades, one being serrated. He also has a snare which can be used with one hand. The parts are prepared for the operation by antiseptic washes, and the use of a solution of suprarenal extract.

Chronic Nasopharyngeal Bursitis.

Dr. C. Dunbar Roy, of Atlanta, Ga., read this paper. He expressed the conviction that adenoids were present in all chil-

dren, and that they are not the result of climate, but are greatly influenced in their growth by climate. The anatomy of the region was reviewed, and the statement made that anatomists were not agreed as to the existence of the pharyngeal tonsil. Those who dispute the existence of this bursa, he felt sure did so because of anatomical and not clinical study. He personally believed there were certain cases of nasopharyngeal catarrh which were dependent upon a pathological state of this bursa. He believed this bursa was only rarely present. The treatment that had succeeded best in his hands was the application of a solution of nitrate of silver, sixty grains to the ounce, applied directly to the surface affected, and then spraying with hot melted vaseline and orthoform.

Dr. C. G. Coakley, of New York City, said that he had seen cases similar to those reported in the paper, and he had always regarded them as the result of a peculiar arrangement of the lymphoid tissue in the nasopharynx. The formation of deep recesses was undoubted, and some of them extend down even to the periosteum of the bone. In the cases under discussion he thought there was a deep recess passing under a band of connective tissue. He had curetted such a case with temporary benefit only. The relapse had been found to be caused by a retention of secretion, and on the thorough removal of the secretion from the blind pouch, the parts had healed permanently. The curette passes over the pouch without removing this material.

Diseases of Stenson's Duct, and the Treatment. By Carl E. Munger. Waterbury, Conn.

This paper appeared in *THE LARYNGOSCOPE*, Vol. XI, No. 3, p. 214.

LARYNGOLOGICAL SOCIETY OF LONDON.

SIXTY-NINTH ORDINARY MEETING.

December 1, 1901.

E. CRESSWELL BABER, M. B., President, in the Chair.

Perforation of Left Faucial Pillar.

Shown by Dr. Furniss Potter. This case was exhibited chiefly because it presented a considerable contrast to the case shown by Mr. Waggett at the last meeting of the Society, and also because of Dr. Clifford Beale's remarks on that occasion, who stated that from inquiry he had learned that perforation as the result of scarlet fever was almost outside the experience of physicians at the fever hospitals.

The patient, a single woman æt. 24 years, stated that she had scarlet fever when she was four years of age, at which time she had "a very bad throat and mouth." No history of syphilis was obtainable. On examination a slit-like opening about three-quarters of an inch long was seen in the left anterior faucial pillar, through which a probe could easily be passed. In the right posterior pillar there was the appearance as of a perforation, but a probe could not be passed through. There was considerable cicatricial tissue in the pharynx, and the right posterior pillar was partially adherent to the pharyngeal wall. The angles of the mouth were scarred. There were no signs of tonsils. As a result of the scarring there was considerable deformity and interference with distinct articulation, the patient speaking in a manner somewhat resembling that of a case of cleft palate.

Dr. Clifford Beale said that on looking at the case one could not help having rather a doubt as to its causation. There were scars on the edges of the lips and elsewhere in the mouth, which were, in his opinion, most probably due to infantile syphilis. He thought it hardly fair to label the case as being definitely and entirely due to scarlet fever. If scarlatinal ulceration was a com-

mon cause of perforation more cases would have been noted, since scarlatinal patients were always kept under observation for some weeks after the cessation of the fever.

Sir Felix Semon did not quite know for what purpose the case had been shown. Was it merely to show the occurrence of perforations in the palate, or was it brought forward as a counterproof against the possibility of a congenital formation of such clefts in the palate? He thought the case was an excellent illustration of the fact that faucial webbing might be developmentally explained. He could not think of a better illustration showing the difference between a congenital defect and one of ulcerative agency, for in the congenital cases there was absolutely no trace of cicatricial tissue at the edges of the clefts, whereas in this case the cicatricial tissue was most marked.

Dr. F. de Havilland Hall suggested that possibly scarlet fever might have had something to do with the condition by depressing the patient's vitality, and allowing the poison of hereditary syphilis to act.

Dr. Furniss Potter said, in reply, that with regard to Dr. Clifford Beale's remarks as to syphilis acting as a cause, he had carefully questioned the girl, but could not elicit any history leading him to suppose that she or her family had been affected by syphilis. The patient stated that she suffered at the time of having scarlet fever from very severe ulceration of the throat and mouth, the ulceration, in fact, extending to the mucous membrane inside the cheeks, and to the lips. This would, he supposed, account for the scars at the angles of the mouth.

With regard to Sir Felix Semon's question, he showed the case because he thought it was in sharp contrast to the one shown by Mr. Waggett at the November meeting, and also because it would be of interest after Dr. Clifford Beale's remarks on that case in November.

Macroscopic and Microscopic Specimens of the Larynx From Cases of Lymphadenoma, Lympho-Sarcoma, Tuberculous Lymphadenitis, Etc.

Shown by Dr. Jobson Horne. Dr. Jobson Horne exhibited and demonstrated these preparations, and said that upon them he had based his opinion that the diseases generally grouped under the name of Hodgkin's disease were due to infection, and that one manner of entry of the infecting agent was through ulceration in

the larynx. An account of the work he had done on this subject would be found in the 'Journal of Laryngology' for December, 1901. Dr. Horne mentioned that in one of the cases (microscopic sections of which were exhibited) he had found tubercle in a gland which presented the structure of lymphadenoma, and which was adjacent to the ulcer in the larynx; this, he considered, raised the question whether the ulcer in such a case and in the absence of tubercle in the lungs should be regarded as evidence of primary tuberculosis of the larynx.

Dr. FitzGerald Powell thought he understood Dr. Jobson Horne to say lymphadenoma was due to tubercular infection; he should like this explained.

In reply to Dr. FitzGerald Powell's question as to whether lymphadenoma and tuberculosis were to be regarded as one and the same disease, Dr. Horne said it was a point on which it was difficult to make himself clearly understood, for this reason: That tuberculosis was an entity, and lymphadenoma might also be one, but at present, no two people in discussing lymphadenoma seemed to be quite agreed upon what should be regarded as lymphadenoma. Dr. Horne said he recognized a distinct histological structure as characteristic of lymphadenoma; in that structure he had at times observed distinct histological tubercle with giant-cells and tubercle bacilli; whether the lymphadenoma structure had been developed through the presence of tubercle, or whether the tubercle had been added to the lymphadenoma, there was not sufficient evidence at present upon which to base an answer.

Case and Specimen of Tubercular Rhinitis in a Man, Aged 35, Treated With Roentgen Rays.

Shown by Mr. L. Lawrence. The patient, a road surveyor, had been troubled with discharge from the nose for rather more than a twelvemonth. Some months ago he was treated with douches, first of boracic acid, and later of an alkaline lotion with some apparent benefit. Later the discharge returned, and on September 21st last, the following condition was noted: The whole septum, both sides and also both sets of turbinate bones were, as far as visible, greatly inflamed and covered here and there with yellow patches. The mucous membrane in many places was polypoid. In the floor of the nose on both sides the septum and inferior turbinals were pressing against each other. There was abundant of-

fensive discharge from the nose. A piece of polypoid mucous membrane was removed for microscopic examination, and well-marked tubercle (exhibited) was shown. The man's general health had been good all along, but he had had severe supra-orbital neuralgia and some pain in the eyeballs. Treatment by exposure to Roentgen rays had been tried since September. The patient had had twenty-one applications, varying from seven to ten minutes each. His symptoms had considerably abated, and there was much less swelling in the nose than formerly. The pain also had gone from eyes and forehead, and the patient now expressed himself as feeling more comfortable.

Dr. Hugh Walsham explained the technique of the treatment of such cases with Roentgen rays.

Dr. Herbert Tilley wished to suggest in connection with this case that if after twenty-three applications of the Roentgen rays, administered by such an expert as they knew Dr. Hugh Walsham to be, the improvement was not more marked than it appeared to be in this case, it was high time to proceed to other and more drastic measures of treatment. He suggested thoroughly curetting the ulcerated surface under general anesthesia, followed by the rubbing in of pure lactic acid. The application of the Roentgen rays was a very interesting form of treatment which one would like to see more often applied to difficult cases of lupus of the inside of the nose, especially in the earlier stages of the disease. He could conceive that it might produce good results, similar to those obtained in lupus of the skin. He did not know how bad this case was when it was first seen before the rays were applied, but it was obvious that it must have been an exceedingly bad one if the present condition of things was supposed to be one of great improvement.

Mr. de Santi had recently had two such cases under his care in the out-patient department; they were both tubercular affections of the nose. One was treated by the Roentgen rays and the other he was treating with urea (ten grains to the ounce of water). He was bound to admit that the latter treatment had been more effective than the former. The urea was taken internally, and local treatment was also applied to the interior of the nose of the nature mentioned by Dr. Tilley (scraping, lactic acid, etc.). He had also had very satisfactory results in cases of tubercular glands of the neck treated by the internal administration of urea.

Dr. St. Clair Thomson suggested that as primary tuberculosis of the septum was very rare, Mr. de Santi should put his cases on record. There were only seven cases in British literature bearing on the subject. Six of these were reported by Mr. Steward, of Guy's Hospital,* and the seventh by himself.† His authority for this statement was Renshaw of Cambridge, who searched the literature in connection with some animal experiments in which tuberculous matter was inoculated into the nose ('Journal of Pathology,' vii, No. 2, 1901, p. 142). These seven cases did not include lupus. His own case was shown at the Clinical Society, and he had watched it for four years. The treatment had, to a great extent, been palliative, and its condition was now much better than the one they had just seen in the adjoining room. The treatment in his own case consisted of cleanliness, with a little curetting, the use of lactic acid, and general hygiene. The patient objected so strongly to the curette, and was so positive that she was better without it, that he had not pressed it. The same patient was treated by Dr. Watson Williams at the Bristol Infirmary with tuberculin, to which she reacted violently according both to her own account and that of Dr. Watson Williams, and she was no better for it. He had not seen the patient now for a year, but the progress of the disease was extremely slow, and at that time her condition was very comfortable.

Mr. de Santi, in reply to Dr. Thomson, said his cases were not primary tuberculosis of the nose, but cases of lupus, which he included in the designation "tubercular."

The President regarded the case as one of chronic tuberculosis of the nose; such cases were not uncommon. As regards the light treatment, he had had a case of this description which he saw in the spring, in which the patient received eighteen applications of Finsen's light treatment for spots of lupus outside the nose, and twenty applications of X-rays. The former seemed to do some good. Of the X-rays he could not speak so decidedly; if they had any effect at all in this case, which had been previously treated by curetting, lactic acid, etc., it was in making the parts look more glazed and drier. As regards the internal administration of urea, he mentioned that his colleague, Mr. Buck, had obtained good results from it in lupus of the skin. He himself had tried it in one case of

*"Guy's Hosp. Reports," Vol. LIV.

†St. Clair Thomson, "Clin. Soc. Trans.," October, 1897, and February, 1900.

tuberculosis of the nose, and had given it for four months. The nasal mucous membrane had been previously curetted and treated with lactic acid, and the patient expressed herself as very satisfied with the urea treatment; at any rate, no re-growth had occurred, although there had been no scraping for some months, only applications of lactic acid. It was impossible, of course, to draw any conclusions from a single case of this character; a large number would require to be treated before an estimate of the value of urea given internally could be formed, and it should, if possible, be tried on cases that had not been submitted to local treatment. With regard to the case under discussion, he thought thorough curetting was necessary, or else a further course of the Roentgen rays. Personally he would advise the former, and then apply lactic acid in the usual way. The society were much indebted to Mr. Lawrence for bringing forward such an interesting case, and also to Dr. Hugh Walsham for explaining the method and technique.

Mr. Lawrence said: "As regards the treatment of the case, of course the obvious thing at present would be to curette it and rub in some lactic acid. I think, looking to the fact that the Rontgen rays have done considerable good, and that there is really no great urgency in the case, and that it is improving slowly, it is worth while trying the rays for a little longer, especially as Dr. Walsham is willing to go on with the treatment to see how it answers. On a future occasion I will, if you will allow me, bring the patient before you again."

Case of Complete Loss of Internal Framework of the Nose in a Girl Aged 22.

Shown by Dr. Cathcart. The patient was quite healthy up to the age of thirteen. She then contracted scarlet fever, followed by inflammation in the nose, which resulted in complete loss of all the internal nasal structures. The bridge of the nose had fallen in, and Dr. Cathcart would like to have the opinion of any member who had had experience of the subcutaneous injection of paraffin as to whether this was a suitable case for such treatment.

Dr. Scanes Spicer had had one case in which he had injected vaseline under the skin of the nose for a very similar deformity. The only disadvantage which followed was that some of the paraffin worked its way into the upper eyelid. He had shown the casts of the nose before and after treatment, and photographs at the

meeting of the British Medical Association at Cheltenham this year. Within the last few weeks he had handed over the patient to the ophthalmic department to see if it were practicable to remove the paraffin from the subcutaneous tissue of the lid; but having made an incision, Mr. Keeling had not been able to improve matters, and so the puffiness of the lids remained. He hoped to show the photograph and the patient at the January meeting of the society if possible. The technique for inserting the paraffin into the nose was rather troublesome. He used just such a small syringe as used to be used for tuberculin injections. He heated the paraffin in a water-bath, and had the patient standing near. Having sterilized the skin with alcohol and sublimate solution, he injected three or four syringefuls of the paraffin into the subcutaneous tissues over the middle of the nasal bridge, and moulded the mass up with the fingers to the shape of a normal nose. The point of injection was sealed with collodion. In future he would inject only a small amount at one time, and repeat as necessary, and he would press down the skin at root of nose on to the subjacent tissues, so that nothing could escape, at all events at time of injection. He thought Dr. Cathcart's case was a suitable one, because the skin was so freely moveable, and a bolster of paraffin between the skin and the bridge would make a presentable nose. The paraffin in his own case had now been in situ six or seven months, and it was really wonderful how well it filled up the depression which had previously existed in the bridge. Before commencing treatment the condition was quite as bad as that now seen in Dr. Cathcart's case, whereas now there was quite a decent bridge, though the feature was not of an ideally refined type.

In reply to Dr. Tilley, Dr. Spicer stated that the paraffin used melted at 105° or 106° F., and was sterilized. It was a mixture of lard and soft paraffin, as first recommended by Dr. Gersuny of Vienna.

Dr. St. Clair Thomson asked if there were not some doubt as to this case being the result of scarlet fever. He saw the words used to describe the case were "after scarlet fever." Did the history point indubitably to this destruction being the result of scarlet fever? Perhaps members with a greater experience than he possessed would tell the society whether it was ever a recorded occurrence for the bony framework of the nose or even part of it, to be destroyed by scarlet fever.

Dr. S. Snell thought that the patient had been the subject of interstitial keratitis; there was also scarring at the right angle of the mouth, and he was therefore of opinion that this was a syphilitic lesion, perhaps lighted up by the scarlet fever.

Dr. Cathcart was much obliged to Dr. Scanes Spicer for the description of the technique he had given, and for the results of his experience, and if he decided to inject paraffin he would take advantage of the latter, and try and prevent the paraffin going into the lids.

With regard to what Dr. St. Clair Thomson had said in reference to the etiology, according to the description given him, the affection came on immediately after or during an attack of scarlet fever.

With reference to a specific origin, there was a small leucoma on the corneal periphery below, in the right eye, but it was confined to one eye and was not interstitial keratitis, but a leucoma following an ulcer.

Case of Mal-Development of the First and Second Branchial Clefts.

There is a rudimentary auricle, slight facial paralysis, and a sinus halfway down the anterior border of the right sternomastoid. There is also marked hydrocephalus.

Case of Epithelioma of the Epiglottis in a Middle-Aged Man.

Shown by Mr. E. Waggett. This was a case of slow-growing epithelioma involving the cervical glands. It was brought forward as one in which divergent opinions might be expressed as to the possibility of radical operation.

Sir Felix Semon did not think this a case suitable for operation. The disease was very extensive, and had infiltrated the pharyngeal wall on both sides; there were also large glands on both sides. Even if it were possible to remove the disease entirely, which he doubted, rapid recurrence would be unavoidable.

Mr. de Santi fully agreed with the remarks of Sir Felix Semon. He did not think in that particular case it would be possible to get away the whole of the disease. It should be left entirely alone.

Case of Cicatricial Stenosis of the Pharynx in a Young Woman, the Sequel of Cut Throat Inflicted Eighteen Months Previously.

Shown by Mr. Waggett. Deglutition and respiration were embarrassed by a firm web binding the epiglottis to the posterior wall of the pharynx. A cutting operation through the mouth had been followed by some dyspnea, and it was now proposed to perform laryngofissure.

Case of Paralysis of the Left Vocal Cord in a Woman Aged 42, Probably of Specific Origin.

Shown by Mr. de Santi. The patient had suffered from embarrassed breathing for from three to four months; she had also had a bad cough during the last six months. There were well-marked tertiary scars about both legs, and her last baby, born five years ago, had had snuffles, etc. Examination of the larynx showed well-marked paralysis of the left vocal cord, otherwise the larynx was normal. There was no swelling in the neck to be discovered, and examination physically of the chest had been negative. The case looked, however, like one of thoracic aneurysm with pressure on the left recurrent laryngeal nerve, and this would tally with the history of syphilis. (Subsequent to the meeting the thorax was examined by the rays, and a dilatation of the arch of the aorta easily made out.)

Case and Specimen of Fibroma of Nasal Vestibule.

Shown by Mr. W. H. Kelson. The patient, a man, came to hospital complaining of a tumor which blocked the left side of his nose and produced considerable deformity. He had noticed it for about ten years. It looked and felt like a cyst. An incision was made through the skin of the vestibule, where the growth appeared to take origin, and it was enucleated. The tumor, which was about the size of a small hen's egg, was solid, and microscopically was seen to be a fibroma. Patient had had one or two similar tumors removed from other parts of his body. The side of the nose previously blocked was now pervious, and the deformity had quite disappeared.

Case of Sublingual Dermoid Cyst in a Male Aged 17.

Shown by Dr. Wyatt Wingrave. The symptoms were chiefly discomfort in deglutition and speech of about two months' dura-

tion. The swelling was visible on each side of the frenum lingue of a somewhat purple color. It projected below the mandible, fluctuated, and was painless.

It was opened nine days ago on the left side of the foramen, releasing at first a small quantity of clear thin fluid, with a few white flakes. On digital pressure about two ounces of white, pasty matter, resembling German yeast, was evacuated. This mass was not fetid, and consisted microscopically of amorphous fat granules and epithelial squames.

Part of the capsule, which was deeply situated and very thick, was excised, and the cavity, which extended under the tongue between the genio-hyoglossal muscles, was scraped and swabbed out with pure phenol.

The foramen cecum was not well marked, and although the cavity extended closely to it, no actual communication could be made out.

The contents conformed in every respect with cholesteatomatous cysts of the auricle.

A similar case was recently under his care in private, in the person of a young athlete aet. 22. The history, anatomy, and treatment were exactly like the present case, but it healed without supuration, and had caused no further trouble, there being no signs of its existence eight months after operation.

Case of Tubercular Larynx with Fixation of the Left Cord.

Shown by Mr. C. A. Parker. The patient, a man aet. 29, complained chiefly of hoarseness. On examination there was found to be some general chronic laryngitis, but the more marked pathological changes were confined to the left side of the larynx. The left cord was infiltrated, ulcerated, and fixed, and there was a red fleshy swelling springing from the left ventricular band.

The patient had been losing flesh slightly, and there were signs of commencing phthisis at the left apex.

Just before coming to the meeting Mr. Parker had learned that the case had previously been brought before the Society by Dr. Furniss Potter in June last.* There were then no signs of phthisis, and the cord was freely movable.

Dr. Clifford Beale stated that when he examined this case he certainly thought that the left cord moved as well as could be ex-

*See 'Proceedings,' Vol. VIII, p. 141.

pected in a patient the subject of that amount of disease. He did not think it was fixed when he saw it. It quite fell into one's ordinary experience of unilateral tubercular disease in the larynx when comparatively acute. Sometimes in such conditions the cord worked well and sometimes not. Very often in consultation one had a little indecision in these cases as to whether the cord was fixed or not, but after observing it for a short time one generally came to the conclusion that the damaged cord moved very much like an arm when damaged, i. e., sometimes better than at other times, but at all times badly and stiffly. With regard to the question of fixation as the result of tubercular disease, he thought it would be better to exercise care in reporting and describing these cases if there was a doubt as to the absolute fixation. Such a case as the one under discussion, if so described, would make it appear that the Laryngological Society of London recognized fixation of the cord as one of the natural sequences of tubercular disease of the larynx. He ventured to say that the Society would not give their assent to that opinion. He had not yet seen any case put on record to prove that fixation of the crico-arytenoid joint did occur as a direct result of tubercular disease.

Mr. C. A. Parker said in reply that he quite agreed with Dr. Clifford Beale that there was not absolute fixation of the cord; "impairment of movement" would have been a more correct description. At times, however, he thought the cord refused to act at all.

Case of Re-Growth of Malignant Disease in a Man Aged 52, After Partial Removal by Laryngofissure.

Shown by Dr. StClair Thomson. This patient was shown to the Society in June last (vide 'Proceedings,' vol. viii, p. 136), with a growth involving the anterior four-fifths of the right cord, and the anterior third of the left. It was then generally agreed by members that the growth was malignant and suitable for thyrotomy. This operation was undertaken on June 18th. and as soon as the skin incision had been carried down to the front of the larynx it was seen that the disease was much more extensive than any one had suspected. The glands in front of and alongside the larynx were infiltrated and the muscles even were affected, while the thyroid cartilage itself had broken down in the middle line. It was noteworthy that no one who had seen the case before-

hand had suspected this malignant perichondritis, though possibly it was indicated by a red fleshy granulation below the cords in the anterior commissure. (This was indicated in a drawing handed round, made by an artist the day before the operation.)

In spite of the extension of the disease beyond the confines of the cartilaginous voice box it was thought desirable to give the man any benefit of doubt, and all the soft parts inside of the thyroid cartilage were widely removed, the cartilage being left bare on each side and the cords removed right back to the arytenoids. The infiltrated parts of cartilage in front were cut away.

One interesting point was to note how well the patient stood the operation. That evening his temperature was 100.8° , but the next day it was only 99.4° , and it never rose higher. He swallowed water on the evening of the operation. The next day he sat out of bed for four hours, and forty-eight hours after the operation he was swallowing solid food, such as eggs and bread and butter.

The neck wound healed well, and he gained a fair whispering rough voice from the development of cicatricial tissue in the larynx into pseudo-vocal cords. At the end of July he appeared fairly well.

He did not come under observation again until November 30th, when the growth was seen to have re-grown on the right side, where an enlarged gland is to be felt.

The growth removed was reported by the pathologist to be epithelioma.

The patient now weighed fifteen stone and had remained these six months in the enjoyment of good general health, and no local discomfort beyond the diminished voice power.

Sir Felix Semon would make a further attempt, for it seemed to be a pity that nothing more should be done. The disease still appeared to him limited enough, so that a second operation of the same sort might be more lastingly successful than the first one had been.

Mr. de Santi understood from Dr. St. Clair Thomson that when operating enlarged glands were found, and also some glands which were not usually described, namely, one or two in the front of the larynx—the prelaryngeal glands. It would be interesting to find out whether these glands, which were removed at the time of operation, were infiltrated with epitheliomatous disease. If so—and

it was presumable they were involved—one would not get any really good results from a second operation, as recurrence would undoubtedly take place rapidly.⁹ Moreover, the disease was very extensive, and it was a question whether its limits could be at all defined. In his opinion, therefore, it was not a suitable case for secondary operation.

Dr. Lambert Lack did not think further operation advisable. The growth had spread to the arytenoid and anterior wall of the pharynx. If operation were decided on, the case required total extirpation of the larynx and part of the pharynx as well.

Sir Felix Semon said he should like to know why extirpation of the whole larynx was recommended by the last speaker. There was no evidence of the return of the disease on the left side. In other respects the man was in a good state of health. If he personally was in this man's unfortunate position, he would rather undergo a second operation than go certainly downhill, as must otherwise be the case.

In reply to Sir Felix Semon, Dr. Lack said the chief point in favor of extirpating the whole larynx was that the mortality of cases in which half the larynx had been removed was very much greater than that of cases in which entire removal had been done. He further thought that total extirpation would give a better chance of freedom from recurrence.

Dr. St. Clair Thomson said he had not seen the patient since the end of last summer until a few days ago, but after some discussion of the case in the next room the history came back to his memory. He was speaking now without having recently looked up his notes. When he made the first incision at the operation, he came down at once, as Mr. de Santi had mentioned, upon some glands in the neck which were distinctly infiltrated. They were situated over the crico-thyroid membrane. The thyroid cartilage itself was also involved, and was ulcerated so much that he resected portions of it, and clipped away a lot of muscle which appeared to be infiltrated. The pathologist reported that the growth was epitheliomatous. The disease had spread very much more than was suspected before operation. He agreed with Dr. Lack that it seemed to him the disease had spread through the arytenoid, and very possibly to the side of the pharynx quite close to the tongue, and so he thought an operation of any sort was almost hopeless, especially when one bore in mind the extralaryngeal conditions found at the laryngofissure six months ago.

Case of Complete Paralysis of the Right Vocal Cord in a Man Aged 33.

Shown by Mr. E. W. Roughton. The patient had well-marked physical signs of phthisis and a small, deep-seated swelling in the right side of the neck, which Mr. Roughton thought was a mass of tuberculous glands involving the recurrent laryngeal nerve.

Dr. Clifford Beale had some doubt as to the absolute paralysis of the right cord here, for he saw it move to a certain extent.

Dr. FitzGerald Powell said there did not appear to be any tubercular disease in the larynx, but he thought the cord was quite paralyzed; it was suggested that this was a case of fixation or paralysis of the cord from enlarged tubercular glands in the neck pressing on the recurrent laryngeal nerves, and this he thought to be the case.

Dr. Scanes Spicer thought the condition one of immobility from paralysis of nerves rather than organic fixation. He could not detect any movement whatever in this case, whereas he agreed with Dr. Clifford Beale as to the previous case shown as paralysis of cord that there was now considerable movement.

In reply Mr. Roughton said he did not think there had been any tubercular disease of the larynx at all.

Case of Hoarseness in a Child Aged 1 Year and 10 Months.

Shown by Mr. E. W. Roughton. In this case Mr. Roughton had been unable to obtain a view of the larynx.

Dr. Scanes Spicer considered that this was a very suitable case for trying the method of general chloroform narcosis with simultaneous local application of cocaine. He continued to find this combined anesthesia invaluable in a large number of cases of laryngeal trouble in children in which it was essential to examine or operate on the larynx.

The President would advise trial of an examination with cocaine, using a tongue depressor and small laryngeal mirror. During respiration a momentary view of the glottis might be obtained.

Dr. Lambert Lack thought it would be quite easy to examine the child with the aid of his tongue depressor without using either chloroform or cocaine.

The President said he knew Dr. Lack's method, but had not always found it successful.

Growth in Larynx in a Case of Syphilis (For Diagnosis).

Shown by Dr. H. Lambert Lack. This patient, a woman aet. 37, has been under treatment for a month with ulceration of the left vocal cord, fixation of the left side of the larynx, and a fleshy growth springing from the anterior commissure. There is extensive scarring of the palate attesting former syphilis. In spite of large doses of potassium iodide (gr. xxv ter die) the laryngeal growth is increasing rapidly. The case is shown for suggestions as to diagnosis and treatment.

Dr. St. Clair Thomson said that pieces of the growth had been punched out, and so it was impossible to say clinically what it might be. He would like to hear the microscopist's report, as it might be tubercle, syphilis, or almost anything. At present it was only an ulcerated thickening.

Case of Swelling of Left Side of Nose (for Diagnosis.)

Shown by Dr. Furniss Potter. The patient was a woman aet. 49, who stated that the swelling in her nose had been developing for the last four years. She had had pain at times, and some discharge. There was no history of syphilis. On examination the left side of the nose was seen to be considerably swollen externally, the mucous membrane of the left nasal fossa was swollen, and bled very readily on being touched. The septum was much thickened and presented two perforations, one behind the other.

Dr. FitzGerald Powell said he thought that this was a case of breaking-down gumma or tubercular abscess, but the perforation of the septum led one to suspect a specific origin. On making firm pressure on the swelling outside, pus was distinctly seen coming from a sinus on the inside of the nose.

Dr. St. Clair Thomson thought the condition of the septum suggested tuberculosis much more than syphilis, and that a portion of the hypertrophy might be removed and examined microscopically. It was a sort of thickening that could not be easily described, and was similar to the tuberculous case he had referred to earlier. The patient under discussion had had for four years a thickening of the skin on the nose, and he did not think it likely that a node could remain in statu quo as long as that.

The President agreed with Dr. St. Clair Thomson in believing the swelling looked more like tuberculosis. A piece should be scraped off and examined under the microscope.

Dr. Furniss Potter would act on the suggestions made, and obtain a scraping from the nose and have it examined microscopically.

Case of Stenosis of the Pharynx.

Shown by Mr. C. A. Parker. The patient, a woman aet. 37, stated that when ten years old she had an abscess in the neck followed by trouble in the throat which caused her to talk thickly. She was then and for many years afterwards under the care of the late Sir Morell Mackenzie. There was no history of scarlet fever and there was no definite signs of hereditary syphilis.

On examination, the tonsils and posterior pillar of the pharynx were seen to be bound down to the posterior wall of the pharynx; lower down the epiglottis was adherent to the pharynx, leaving a small circular opening not much bigger than a three-penny piece. On strongly depressing the tongue the opening could be seen by direct vision as a narrow vertical chink about half an inch long and an eighth of an inch wide. The patient had no difficulty in respiration and but little in deglutition; she could swallow solids, but occasionally fluids "go the wrong way."

The President said this case reminded him of one he had shown some years ago at the society—a young person with stenosis of the lower part of the pharynx (see "Proceedings," Vol. I, p. 9).

On the Graver Complications of Chronic Purulent Otitis Media—

H. F. WATERHOUSE, *Edinburgh Med. Journal*, Sept., 1901.

The complications which the author describes under this heading are (1) aural polypi, (2) purulent inflammation of the mastoid antrum and cells, including caseous and cholesteatomatous collections; (3) paralysis of the facial nerve, (4) ulceration of blood vessels, (5) meningitis, (6) cerebral and cerebellar abscess, (7) pyogenic lateral sinus thrombosis.

He then discusses under each of these headings the symptoms met with, illustrated by cases occurring in his own practice. This paper, which contains much useful information, cannot be briefly abstracted with advantage, but the reviewer recommends it to the notice of all who are interested in the subject.

A. LOGAN TURNER.

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The Histogenesis of Hyperplasia of the Pharyngeal Tonsil—DR. OSKAR BRIEGER (Breslau), *Archiv fur Laryngologie*, Band XII, Heft 2.

After a very full and extensive discussion of all the various theories as to the etiology of this condition, the author advances his own views, which are as follows:

The hyperplasia in question does not exist as a true hypertrophy of the whole organ, but the mass of the enlarged tonsil is composed mainly of a great increase in the amount of lymphoid tissue. The author is a firm believer in the beneficent and protective power of lymphoid tissue. He therefore regards this hyperplasia simply as an effort of nature to increase the resisting power of the individual to pathogenic germs at a time of life when the other tissues are particularly susceptible to their influence. As the individual approaches adolescence, the tissues in general gain more resisting power, and the lymphoid masses in the pharynx slowly disappear.

It so happens that from the situation of this lymphoid mass, in some instances, certain mechanical obstructions occur and certain irritations are developed. When these occur the mass should be removed, but not otherwise. The author sees cause for operation, not in the mere presence of hyperplasia of the pharyngeal tonsil, but in the occurrence of the various disturbances which may be set in motion by it.

VITTUM.

ABSTRACTS.

The Communicability of Scarlet Fever by Discharge From the Nose—J. KERR LOVE, *Glasgow Medical Journal*, December, 1901.

The writer relates a case in which one brother took scarlet fever from the other, thirteen weeks after the latter had contracted the disease. The writer satisfied himself that the infection could only have been obtained from the otorrhea.

A. LOGAN TURNER.

Some Questions With Regard to Acute Middle-Ear Inflammation. P. McBRIDE, *Lancet*, May 18, 1901.

The author first narrates a case in which a small pouting perforation in the left drum, of recent origin, proved intractable until pus had been evacuated from the right maxillary sinus. Consideration of this case raises several important questions, which he treats seriatim :

1. The Connection between Acute Otitis Media and Affections of the Nose and Naso-pharynx.—It is, of course, perfectly well known that acute nasal or pharyngeal inflammation may lead to suppuration of the middle ear. It is so known that marked adenoids, and possibly much-enlarged inferior turbinates, may predispose to the affection. It is, however, not sufficiently recognized that there is a form of adenoids which practically produces no other trouble, but which may be responsible for recurrent attacks. In these cases the patient breathes perfectly; he may be subject to colds in the head, but they do not attract much attention. On examining with the rhinoscopic mirror, however, a layer of adenoid tissue is observed occupying the space between the Eustachian orifices, and apparently pressing upon their margins. On digital examination, the lymphoid tissue will be felt, but it will be observed that there is not any great quantity present. In such cases, however, the recurrent acute ear attacks will usually cease after the adenoid tissue has been removed.

2. What is the best Method of Treating Middle-Ear Inflamma-

tion After Spontaneous or Artificial Perforation Has Occurred?—The method of plugging the meatus with aseptic dressing after, so far as possible, sterilizing the canal is not at all suitable for all cases. In this instance the perforation certainly diminished in the two days during which such dressings were applied. In future the author will adopt this method with great caution, if at all, when the perforation is small and the membrane tends to bulge. It is, of course, now the custom to decry the use of Politzer's bag, and even the catheter, in all cases while suppuration is still going on. In the average patient, where there is no recognizable infective secretion in the nose or naso-pharynx, and where drainage is difficult owing to the small size of the perforation, he is still inclined to advocate both methods. If they seem actually beneficial, he is not disposed to be deterred from their use because they are hypothetically, or even theoretically, dangerous.

3. When Should the Question of Mastoid Operation be Considered?—There are two conditions which, after perforation has occurred, seem to the author to indicate that the case will be troublesome—to-wit, (1) excessive discharge, and (2) a small perforation in a bulged membrane. When the discharge appears in such quantity that it is hardly conceivable that it can be all secreted by the lining membrane of the tympanum, it will usually be found that after a varying period some tenderness, or even spontaneous pain, arises in the mastoid region.

In the presence of a small pouting perforation and a bulged membrane, the surgeon is often in great difficulties as to how best to obtain drainage. A free incision is valuable for the moment, but, as every experienced aurist knows, it soon closes, and the condition is no better than before. The least indication of mastoid inflammation will give an excuse for operating. It is, indeed, an open question whether the occurrence of pain should be awaited.

One word more as to the method of operating in these recent cases. It is of the utmost importance that the middle-ear structures should be respected, and for this reason Schwartze's method should be adopted, associated, if necessary, with the removal of any softened bone which may be found in the lower part of the process. If these rules be adhered to, we commonly find that the discharge from the ear ceases, the membrane heals, and almost perfect hearing results.

ST. CLAIR THOMSON.

Incudectomy in the Treatment of Progressive Hardness of Hearing, Tinnitus and Vertigo—CHAS. H. BURNETT (Phila.), *Penn. Medical Journal*, Oct. 1901.

Chronic progressive hardness of hearing is the result of a tropho neurosis in the muscular structures of the naso-pharynx, Eustachian tube and tympanic cavity, and not a purely catarrhal process, according to the author.

The surgeon's aim should be to overcome the retractive power of the tensor tympani and thus relieve the symptoms and arrest the advance of this progressive process.

In the author's opinion, the best method to accomplish this purpose, is to perform an incudectomy. The operation should be performed under general anesthesia. Its various details are described.

(In reading over the clear description of the operation as suggested by the author, one not experienced with the technique would imagine that the procedure was quite simple and without danger. No mention, however, is made of the sequelae which may follow such treatment. Instances of faucial paralysis; prolonged suppuration; mastoid involvement; marked vertigo and poorer hearing power have followed surgical intervention in these cases, and ossiculectomy must be well considered, pro and con, before attempting its application in these cases of chronic middle ear disease.

M. D. L.

Acute Amygdalitis ; Its Treatment by the Local Application of Tincture of Iodine—DR. S. FLOERSHEIM, *N. Y. Medical Journal*, Oct. 5, 1901. *

Prompt relief was obtained in three cases of this affection, by the local application of the tincture of iodine, over the tonsils and pharynx. The application was repeated in a few minutes. If much burning followed the treatment, a gargle of warm water was employed.

If applied early, the disease may be absorbed. It is also of service in acute pharyngitis and uvulitis; also in phlegmonous amygdalitis.

The intense redness and swelling has decreased in a few minutes. Sixty-eight cases of acute amygdalitis were treated with marked benefit.

M. D. L.

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No. 3.

ORIGINAL COMMUNICATIONS.

(Original communications are received with the understanding
that they are contributed exclusively to THE LARYNGOSCOPE.)

TINNITUS AURIUM. SOME REMARKS ON ITS CAUSE AND TREATMENT.*

BY THOMAS J. HARRIS, M. D., NEW YORK.

Adjunct Professor Diseases of Nose and Throat, New York Post-Graduate Medical School.
Fellow N. Y. Academy of Medicine, Etc.

Mr. Chairman and Gentlemen:

Every member of this section is proud, and justly so, of the scientific progress made in the department of Otology during the last twenty-five years.

It is probably true that this is equal, or exceeds that made by any kindred branch of medicine in the same time. Not merely has our ability to restore lost hearing been greatly increased, but brilliant results have been secured in the incalculably more important realm of life-saving. Amid this general advance, possibly because of its less importance, possibly because of its obscure nature, one symptom seems to have received little or no recognition, and yet what more annoying or distressing symptom do we have to contend with? Who of us has not been pushed to his wits end to give relief to some intractable case of Tinnitus?

It is not with the hope of offering any new thoughts on this subject that this paper is presented, but rather to serve, if it may, to stimulate investigation and call forth a general interchange of views.

The literature upon noises in the ear is surprisingly limited. Politzer's article still remains one of the most complete and au-

*Read before Section on Otology New York Academy of Medicine, April 10, 1901.

thoritative. Urbantschitsch and Hartmann have contributed valuable articles in their respective books. The subject is not referred to except incidentally in Schwartz's system, nor in Gruber's excellent treatise. In recent years Randolph, Bishop and Gomez have contributed to the subject. Finally, Panse has published within a year an article in the Archives of Otology which shows much care and study.

Frequency.—We are all aware of the frequency of tinnitus in aural disease. As a rule it accompanies or precedes every case at some stage of the disease. In a study of the subject made by the writer some years ago it was found that in 824 cases recorded, there were 321 cases of tinnitus (about 37 per cent). These were divided as follows:

Impacted Cerumern	51 cases
O. M. Chronica Catarrhalis	97 cases
O. M. Chronica Catarrhalis Adhesiva	15 cases
O. M. Suppurativa Chronica	30 cases
Otitis Interna	26 cases
Mixed Disease	44 cases
Foreign Body	1 case
Otitis Externa	5 cases
Eustachian Catarrh	2 cases
Otitis Media Acuta	50 cases

321 cases

This percentage is probably too small. Politzer estimates that tinnitus is found in two-thirds of all ear diseases. How widely this varies in character, intensity and frequency is equally well known. It is scarcely to be doubted that the agony from it has been so great in certain cases that insanity or suicide was imminent, if not actually occurring.

At the outset a proper classification of noises in the ear is essential; without it we cannot look for any satisfactory means for their relief. That tinnitus is not due to any one single cause is now thoroughly well understood. A division then according to the more common etiological factors seems the most rational. The plan of designating tinnitus according to the particular sound it resembles is obviously unscientific. We may say, then, following Hartmann, that all or most cases of tinnitus are due to one of two generic causes—either to some lesion or interference with the function of the sound-perceiving apparatus, the labyrinth, nerve or

brain centre, or to some lesion or other causes interfering with the sound-conducting apparatus.

To the first is given the name of Subjective Tinnitus; to the second Entotic Tinnitus. There is still a class of cases which may be referred to as Objective or Reflex Tinnitus.

Tinnitus resulting from some interference with the normal conduction of sound represents by far the larger number of cases. Panse has gone into this very fully in the article previously referred to. The middle ear is in intimate relation to the large blood vessels of the head, especially the lateral sinus and the internal carotid. Through these channels and others, a continual coursing of blood is taking place; this without question gives rise to constant venous and arterial sounds. The only wonder is that they are not always heard and the only explanation that we are not all sufferers from this is that in the healthy ear there exist unimpeded exits for the sounds. How easily this normal condition can be affected, anyone can quickly satisfy himself by pressing firmly upon the tragus.

Any obstruction at all to the transmission of sound, whether in the middle ear, Eustachian tube or auditory canal, is sufficient to produce tinnitus. A sound which is so feeble as to be lost in the open air is easily heard in a small room; so a blood sound lost by dissipation of sound waves is perceived when these waves are interfered with. Bezold has shown that in pure middle ear disease the low sounds are alone impaired or lost, and Rinne and Schwabach's classical laws of the intensifying of these low sounds by bone conduction are in daily use. The high notes are much less intensified by such interference; indeed, Panse believes that for the perception of the high sounds the ossicular chain is not necessary.

Cases of tinnitus due to some interference with the sound waves represent by far the largest group we meet with. They include the various forms of obstruction to the Eustachian tube, obstruction to the external auditory canal by impacted cerumen, foreign body or inflammation and, as pure types, purulent disease of the middle ear. Here also belong many cases of catarrhal disease of the middle ear. There is a group of cases closely allied to these cases and yet differing clearly from them in origin. This is the class which is known variously as reflex or objective tinnitus. It offers continual interest to the otologist. It occurs in people with

normal hearing. We are usually led to regard tinnitus as a sign for approaching deafness. In these cases the tinnitus has existed possibly for years with no impairment of hearing. Occasionally the sounds are so loud as to be heard by an observer at a distance. These cases are usually due to some muscular spasm or external or nervous stimulation or anomaly. The muscular spasm may be in the tensor tympani, the stapedius, the tubal muscles or even those of the palate.

Cases too are reported of tinnitus due to contraction of some facial muscle through the trigeminal nerve acting on the stapedius. Again, tinnitus has been shown post mortem in one case to be due to the anomalous course of the stylomastoid artery, which ran between the branches of the stapes.

Any strong emotion or any long continued exertion may produce temporary noises in the ear. Allied to this are disturbed circulatory conditions as a result of organic heart, liver or kidney disease, or anemia.

Some persistent nervous noises have been shown to be due to an aneurism in the blood vessels adjacent to the ear. In these latter cases the conduction is normal, but the sound is intensified. Some of these reflex cases cannot be regarded either as muscular or nervous, and without much question fall into the class described by Politzer as nerve tinnitus, etc. Here an excitation of the auditory nerve exists.

Subjective Tinnitus.—This may properly include cases of noises in the ear where no reflex cause exists and all interference with the sound conduction is excluded.

In some instances the labyrinth, auditory nerve or nerve centre is directly involved; in many others there is a sharing in the difficulty with the middle ear in the sclerosis and ankyloses round the stapes and oval window. Doubtless in certain cases disturbance of inter-labyrinth pressure is the condition present.

As instances of tinnitus the nature of which is not fully understood, may be mentioned voluntary noises. Hartmann mentions his ability to produce an audible sound at will. This is probably muscular, either from the tensor tympani or the tubal or palate muscles.

Occasionally cases are met where the sound resembles melodies or human voices. A case of this kind is now under the care of

the writer. He is an epileptic who always hears human voices as the aura preceding the attack. These are regarded by Politzer and others to be indicative of threatened insanity.

Diagnosis.—The diagnosis of noises in regard to their source is intimately associated with the prognosis and treatment. Many cases permit of exact localization; in other instances it is impossible, but every case demands to be carefully investigated.

Our usual method of recording tinnitus in our note books and then stopping, will not suffice. As has been shown, the tinnitus may be due directly or reflexly to almost any condition of the body.

The examination includes, then, every method we employ for a most careful testing of the hearing. We satisfy ourselves of the condition of the drum membrane, the mobility of the ossicles, the patency of the Eustachian tube, condition of the throat and nose. The tuning forks reveal the pitch of the noise. Panse has laid stress upon this and believes that in all cases of pure conduction interference the sound will be low, C, C/, or rarely C₁₁, while subjective tinnitus is always high pitched. It is questionable if this is not too sweeping an assertion, and yet in general it may be regarded as a good rule to follow. Examination of nose and nasopharynx is never to be omitted and in persistent tinnitus long continued, an inquiry into possible organic disease, whether of heart, stomach or liver, is in order as well as an examination into the blood condition.

The particular form the sound assumes is not of great importance. The number of sounds reported is myriad. It is usually the pulsating form which is met in acute disease. This is always arterial or venous. These are the sounds which are always due to interference with sound conduction. Their nature can be in many instances determined by pressure on the blood vessels of the neck, when they disappear for the time being. Hissing sound as of steam escaping, which represents a large number of cases of catarrhal deafness, is indicative probably of labyrinthine involvement.

Prognosis.—The outlook for persons suffering from continuous tinnitus, especially after it has existed any length of time, is not a particularly bright one. In many instances it will continue for a lifetime.

Fortunately, as a rule habit steps in and the patient becomes accustomed to it and suffers much less in consequence, yet the result of treatment is not so unfavorable as is often supposed. Of the 321 cases of tinnitus previously mentioned 137 underwent treatment. Of these 58 were cured, 46 improved, 33 not improved. This is by no means a hopeless prospect. Important in the prognosis is whether the sound is intermitted or continuous, whether it varies in its intensity and especially what the pitch is. Many cases of sound conduction tinnitus can be relieved if the obstruction that exists is in the Eustachian tube or auditory canal, and it is possible to overcome this.

Tinnitus due to sclerosis in the middle and internal ear disappears often of itself after a time. While, it is true, tinnitus is in many instances the premonitory symptom of approaching deafness, we have already stated this is not always the case. Randall, in an interesting communication read before the American Otological Society, cites his own case. He has had persistent tinnitus for years without defective hearing, due, as he believes, not to some muscle contraction, but to the separation of the moist and sticky surfaces of the Eustachian tube.

Finally it must not be forgotten that the intensity of the noise may vary according to various conditions of the weather. Temporary functional condition of the general system will influence the degree of noise.

Treatment.—What do you do for noise in the ear, is a question so often asked by the aurist. The reply should be: There is no single remedy; every case is to be individually examined, the character, situation, cause of the noise, to be determined as carefully as possible, and then the proper means employed to relieve the cause so far as we may. Many times treatment to nose and throat will suffice. Carmalt Jones has secured good results from turbinectomy. To illustrate a common form: Examination reveals a low-pitched noise in a person with advancing deafness, a retracted drum, loss or diminution of sound for low forks and a diminished patency of Eustachian tube; the case is one of probable middle ear catarrh with a conduction sound tinnitus. Here local treatment alone is called for and will often give entire relief. The Politzer method of inflation is the one commonly used. This is to the mind of many aurists not sufficiently exact and much

greater weight is attached to the use of the catheter with the diagnostic tube. The diagnostic tube is an important auxiliary. By it the patency of the Eustachian tube can alone be accurately determined.

The tube sound in diminished patency is characteristic, being in a stenosis of the tube with a stricture of its isthmus, very small and high pitched.

Many cases will not yield, however, to the air inflation. The narrowing has become too much organized. Here systematic dilatation with graded sizes of whalebone or celluloid bougies, as recommended by Urbantschitch, has accomplished brilliant results. Re-established patency means in such results release on (abnormal) resistance to sound waves. It may be said then that every case of high-pitched inflation sound should be tested with the bougie for a possible stricture. This stricture is wont to occur most often at the isthmus of the tube where the bone and cartilages meet.

The bougieing is, however, too often but a temporary means of dilating the stricture and relieving the tinnitus. As a substitute and method which promises a decided advance, is the use of Electrolysis, suggested some years ago by Newman, but recently brought forward again in this country by Duel. In this procedure the stricture is not merely dilated but by use of the negative current it is permanently dissolved. Duel has reported excellent results as regard strictures by its use.

It is too early to venture more than an opinion. The method is being tested by many aurists, and seems to promise much. The electrolysis is accomplished by fine gold bougies in rubber or rubber-wound silver catheters. The current is carefully adjusted by means of a milliammeter, and usually not more than two or three milliamperes are used.

Other cases of middle ear tinnitus are dependent directly on adhesive changes in the middle ear itself and can be relieved by the use of massage to the ossicles and drum membranes. The simplest method is by means of Delstanché's masseur, or that known as the Siegle otoscope, and often they are insufficient,—working somewhat on the same principle. Several aurists have adopted electricity, producing electrical massage in the form of a very rapid vibration. Much was expected from it, and at first the results were very often gratifying. They were in our experience

and that of most aurists, however, only transient and the vibrometer has, we believe, been pretty generally abandoned. Electricity, especially the Galvanic current, has been strongly recommended by some aurists. Jones states that he has succeeded in relieving a large number of cases of tinnitus, at least one-third by the use of this current. The kathode is placed over the ear by means of an adapted binaural stethoscope. The relief, if produceable, will be met at the first treatment. It must be frankly said that his experience is at variance with that of most observers, including the writer. We have yet to see a case where electricity seemed to help, yet in cases where all else has failed, the procedure is simple and it should certainly be tried. Of operative procedure little is to be said. It is almost universally agreed that operation for tinnitus is rarely warranted. Where tinnitus is associated with retraction of malleus and the cause of the tinnitus is in all probability due to a tightening tensor tympani, tenotomy of this tendon is permissible and will give at least temporary relief if the diagnosis proves correct.

Seiss, of Philadelphia, has reported favorable results in tinnitus due to sclerosis of the middle ear from two methods, the application of ethyl chloral to the mastoid and the introduction of warm albolene and menthol into the middle ear per tuba. We regret to say that in a limited number of cases, where we gave both methods careful trial, we got no success.

Where our examination shows no evidence of interference with sound waves and when all local measures prove futile, we are forced to resort to internal medication to relieve the tinnitus.

The therapeutic treatment of tinnitus is to-day exceedingly unsatisfactory. Clear indications for the use of a certain class of drugs are lacking. To a large extent we are compelled to grope in the dark. Direct nerve depressants or sedatives would seem to be called for, and probably are most useful in the majority of cases. In a certain number of limited cases arterial depressants will do good, as enumeration of all the drugs employed by different observers would almost exhaust the pharmacopeia. In many instances the result of the use of the drug is not mentioned, or success has been observed in only a single case. We shall confine ourselves to what have been carefully reported or what we have used ourselves.

These in the order of frequency with which we have prescribed, are:

Strychnine,
Iodide of Potash,
Nitro-glycerine,
Tinc. Gelsemium,
Bromide of Potash,
Tinc. Digitalis.

Strychnine Sulphate in one-sixtieth grain doses before meals gave the best results which are not brilliant. In every case the question of sound wave interference had been previously enumerated. It was used in 17 cases; all but one pure on chronic catarrh or mixed disease. Relief greater or less and in some instances only temporary, was obtained in 7, or 41 per cent.

Iodide of Potash was prescribed in three cases of chronic diseases of the internal ear, with relief in all, and two cases of acute trouble with equal success, while in eight cases of mixed disease there was relief in only two, or twenty-five per cent.

Nitroglycerine was given in several cases with high tension of arterioles. It was often necessary to give large doses, sometimes as high as 20 minims in the day, in order to produce decided physiological results. In at least two cases the effect on the tinnitus was flattering, but naturally the large dose could not be continued. With digitalis, on the other hand, tried where there was a clear nervous or arterial tinnitus, our results were uniformly disappointing. In every instance the drug disarranged the stomach without influencing the noise, so that we have now abandoned its use.

Tincture Gelsemium.—We began using this drug some five years ago, and have employed it in a number of cases, at times with good results. We are not prepared to make too strong a claim for its value and yet the results certainly warrant making use of it, where strychnine has failed. The drug is a spinal depressant and has no decided action on the heart.

In ten cases where it was given there was relief of more or less permanence to five. All of these improved cases were cases of middle ear disease. The drug failed totally in cases of internal disease.

Our experience with aconite, atropine and arsenic has been very limited and totally negative. Bromide of potash so generally

recommended either as the salt or in the form of hydrobromic acid, has been extensively employed as a dernier resort, but without a single exception has proved a disappointment.

Some years ago Blake recommended small doses of quinine frequently repeated. In a single case where it was given and all else had failed, it seemed to give some relief. It has been previously stated that any condition of the general system will have its effect on the noise. We have been wont in associated involvement of the alimentary canal to prescribe salines or saline mineral waters with good results.

Gomez some years ago recommended conium in the form of the alkaloid. He reported a series of cases with excellent results. We have used it recently in a number of cases, but we regret to say without any beneficial results, unless in one case.

Mention should be made of the use of hot air introduced into the middle ear, as recommended by Vansant. Finally it may be of interest to refer to the use of suprarenal extract. Dr. W. H. Bates has used it in over 200 cases with variable results, best in acute cases.

CONCLUSIONS.

1. Tinnitus is a very common and annoying symptom in ear disease.
2. Its origin is not thoroughly understood, but in many cases it is due to interference of sound waves.
3. It does not always mean deafness.
4. Much can often be done for it if the exact cause can be discovered.
5. Drugs are very disappointing in its treatment. Strychnine seems to give best results where local treatment has failed.
6. Careful study and recording of cases is essential to arrive at a proper understanding of the subject.

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EAR COMPLICATIONS AND SEQUELAE OF INFLUENZA.*

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Perhaps the most frequent localized inflammatory conditions secondary to influenza are the acute invasions of the Eustachian tube and middle ear cavity.

Statistics and repeated clinical evidence substantiate the fact that over 70 per cent of all acute inflammatory affections of the middle ear cavity result from previous affections or infections of pharynx or naso-pharynx. This is especially true of all acute foci dependent upon infection by a pathogenic micro-organism. The tonsils and the lateral walls of the naso-pharynx seem to be unusually favorable points of attack, and by virtue of the continuity and similarity in structure of the mucous membrane lining these parts of the upper respiratory tract are extended through the Eustachian tubes to the tympanic cavity and its accessory spaces, the frequency of these ear sequelae is logically explained.

On the virulence and character, then, of the pharyngeal and faucial infection depends the intensity and rapidity of such aural complications. So in simple tonsillitis either follicular or parenchymatous, in whooping-cough and in acute pharyngeal infections where the accompanying micro-organism is not especially virulent, extension through the Eustachian tube and middle ear tract is less common. In diphtheria and scarlet fever, where an especially active invasion of the pharyngeal tissues takes place, ear complications occur with much greater frequency. It is in Influenza, especially of the epidemic type, which usually attacks the nasal and post-nasal areas suddenly and viciously, that the most rapid involvement of the ear ensues. Clinically a severe coryza may call forth similar inflammatory conditions of the ear, but rarely with the same intensity and penetration of the tissues as that form produced by Influenza, which we term "the grippe ear."

The rapid onset of an Influenza infection, no matter what portion of the respiratory tract is involved, is clinically well known,

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as is also the treacherous character of the pathogenic micro-organism responsible for this infection. This is especially true in aural sequelae, for they usually occur suddenly and unexpectedly in the course of an Influenza attack.

The acute otitis media consequent upon a grippe infection is not usually of the simple catarrhal form, but rather ushered in by a symptom complex and an intensity and diffusion of pain about the ear which is at once characteristic of Influenza. The usual catarrhal otitis media beginning with ear ache, and congestion of the membrana tympani and the lining membrane of the tympanic cavity is a form common to all ear sequelae dependent on acute faucial or naso-pharyngeal inflammations; the sudden, intense, deep-seated pain, involving much of the temporal region, with rapid tenderness over the mastoid area and profuse serous effusion into the tympanic cavity, vertigo and persistent hemicrania are characteristic of "the grippe ear."

In simple catarrhal otitis media when the indications for paracentesis auris have been presented and a free drain has been established, pain and pressure-symptoms soon subside; in the "grippe ear" the relief of these symptoms is not always effected after paracentesis has been made and a free drainage secured. The persistency with which this train of symptoms is maintained in an Influenza ear presents a difficult problem in the therapeutics and surgery of this affection.

Anatomically the tympanic cavity proper, the attic, the antrum and mastoid cells are all lined with the same mucous membrane, and in the light of modern otology are now known to constitute the tympanic cavity in its entirety. When, therefore, the pathogenic invasion of the middle-ear cavity by Influenza occurs, it is reasonably assumed and clinically corroborated that such invasion attacks all of these accessory spaces of the middle ear cavity alike. This accounts therefore for the quick mastoiditis frequently occurring almost spontaneously with the onset of ear-ache.

To regard the "grippe ear" simply as an acute catarrhal otitis is to under-value the importance of the subject, the gravity of the affection, the rapidity of its invasion, and the oft-times serious consequences to the patient.

In no other form of acute inflammation in the field of otology, unless perhaps in that of mastoid abscess, is there such a variation

in symptomatology and indications for treatment. In many cases the treatment adopted in simple catarrhal otitis media will suffice to effect a cure.

Pre-eminent among all measures for the relief of acute inflammation of the middle ear cavity, especially where serous, bloody or purulent effusion has taken place, is paracentesis auris. Until recently the indication for paracentesis in such conditions has been that of a bulging membrana tympani. I will go one step further in this direction and urge the free and early incision of the drum membrane as soon as a definite diagnosis of "grippe ear" has been established. I do not wait for the results of thermal applications, either hot or cold, but establish a drain from the middle ear cavity at the outset. If the drum membrane is bulging as a result of effusion in the tympanic cavity, the more promptly we evacuate the contents of this cavity the better; if the drum membrane is retracted producing an interference of air equalization from within and consequent pain, paracentesis re-establishes this air balance. In either case free incision of the drum membrane is the first principle to be observed.

Much has been written of the comparative value of hot and cold applications. This question has been discussed not only in our field of otology, but in all branches of medicine, where acute inflammations require attention. It is generally conceded that in the earliest stages of mastoid inflammation the application of cold, either by the ice bag or Leiter's coil, is the most effective; in the later inflammatory stages heat, either by means of the hot water bottle, aural coil or irrigating douche, is frequently used.

To promote free drainage after paracentesis or spontaneous perforation I use the one-half inch selvedged gauze strip, either sterilized, carbolated or iodoform, packing the canal from fundus to meatus, and renewing the dressing whenever wet or saturated. In the early treatment of Influenza otitis, after free drainage has been secured, I rarely use any of the several forms of antiseptic powders, for no matter how perfectly soluble they may be, there is a possibility of choking up the small incision in the drum membrane through which the pus must be drained. Under no circumstances is Politzerization or inflation indicated in any stages of this affection.

To assist in evacuating the contents of the tympanic cavity

after paracentesis has been made I employ the Siegle otoscope, using only gentle suction, as a too vigorous application of this kind might bruise or injure the swollen tissues of the tympanum.

A condition which requires most careful attention and which I regret to observe is frequently neglected, is the treatment of the fauces and naso-pharynx. As the source of the trouble is usually located in these areas and as continued infection may result from inattention to such measures, active cleansing and medication should here be diligently carried out.

As Influenza is a constitutional invasion, the general treatment of the patient should be given every attention.

In the symptomatology of Influenza otitis one of the most treacherous conditions to cope with is the marked deafness, often beginning in the early stages and persisting until all other symptoms have subsided. Hearing tests with the watch and tuning-fork indicate that the form of deafness common to Influenza otitis is not that of an impaired conducting apparatus alone, but seems frequently to involve the labyrinth as well. In many cases in which careful tests have been made, I have found a marked diminution of bone conduction, thus proving the involvement of the labyrinth in this affection. It seems very plausible that in the extreme congestion of the entire mucosa of the ear the labyrinth should also be attacked. This important factor of marked deafness adds to the gravity of the affection and should direct us to a guarded prognosis as to the final restoration of hearing.

Another unusual condition which unexpectedly occurs in Influenza otitis is sudden deafness.* During the past few years I have observed this neurosis in four or five cases. Sometimes in the early stages of the affection, sometimes in the third or fourth week of suppuration, the patient will suddenly experience that he is unable to hear with the affected ear. In three of such cases, which have come under my own observation, hearing tests were made soon after the occurrence of this symptom and nerve deafness diagnosed, as indicated by absence of air conduction and decided diminution of bone conduction for watch and tuning-fork.

I have one case of this character under treatment at present where all efforts to restore the hearing of the affected ear have thus far failed. I regard this condition distinctly as a grippé neurosis affecting the labyrinth.

Much could be said of the mastoid complications which are encountered in the course of Influenza otitis. With the vigorous onset of an Influenza otitis and the diffuse inflammation of the many pneumatic areas of the tympanic cavity we would expect to find a greater frequency of mastoid complications, but this is not verified by my own experience. In Influenza otitis the characteristic symptoms of the affection develop in such rapid succession that we have almost with the onset mastoid tenderness and sharp radiating pain extending from the mastoid to the occiput, vertex, eyes and teeth. I do not regard these symptoms, however, as characteristic of mastoid inflammation, but rather as a neuralgia so constant in Influenza of every type. In the simple acute or chronic suppurative otitis media with such symptoms, the radical aural surgeon might urge prompt operation; in Influenza otitis I have frequently subdued these symptoms by thermal applications and free tympanic drainage.

When the mastoid antrum and cells are actively attacked in the course of an Influenza infection of the ear the indications for the mastoid operation are so promptly and markedly developed that there is no doubt concerning the diagnosis or operative necessity.

To recapitulate then the main points of value in the conduct of Influenza otitis:

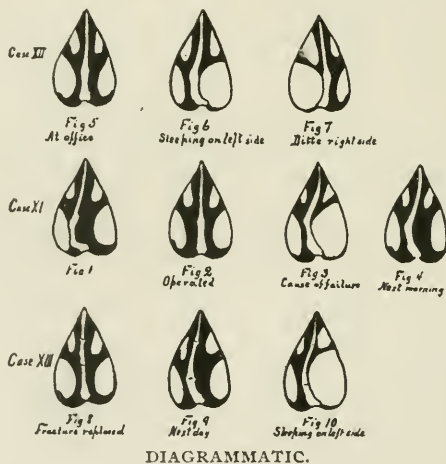
1. Epidemic or endemic Influenza is the etiological factor in this affection.
2. A careful differentiation should be made between simple otitis media and Influenza otitis.
3. Free incision of the drum membrane at the earliest indication of effusion into the tympanic cavity should be made. This free drainage should constitute the most important principle in the treatment of this affection.
4. A guarded prognosis should be given, especially as concerns the complete restoration of hearing.
5. Conservatism is urged concerning operative interference when mastoid symptoms appear, as many of these symptoms are accompaniments of Influenza and should be regarded as neuralgias rather than evidences of suppuration.

DEVIATION OF THE NASAL SEPTUM. WHY DO OUR CORRECTIVE OPERATIONS OFTEN FAIL?

BY CHEVALIER JACKSON, M. D., PITTSBURG, PA.

The interrogatory in the title may be answered thus: Because the surgeon has failed to remove a portion or all of the inferior turbinal from the concave side. This seems a novel and a radical statement, but let us consider the observations upon which it is based.

The first ten cases operated by the writer for septal deviation were, to a great extent, failures. The eleventh case (see diagram) was that of a neurasthenic young lady of eighteen. About two o'clock in the night following the operation I was called by the

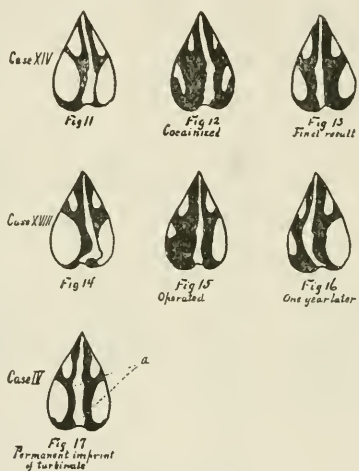


parents on account of the restlessness and pain of the patient. These were due simply to the excitable, neurasthenic nature of the individual, and were readily quieted by a sedative. But the incident was the occasion of a discovery that was well worth my trouble. Quite incidentally I examined the nose and discovered the left inferior turbinal in the very act of pushing the straightened septum back into its old position of deflection as shown in Fig. 3. In the morning, when I saw the patient after being up and dressed, I found the left inferior turbinal, after having undone my careful

straightening of the septum, had shrunken to its usual size and appeared innocent of power for mischief. (Fig. 4.) This experience led to a careful investigation of the nocturnal behavior of the turbinals in the normal and the diseased nose. The results are embodied in this paper.

It is an often noted symptom that in hypertrophic rhinitis the nasal passage corresponding to the side lain upon (the "pillow side") becomes obstructed. When the patient turns, the other nasal passage opens, as the newly-turned-down side closes. This closing is due, as is well known, to swelling of the turbinal tissues incidental to hypostatic vascular engorgement in a relaxed vasomotor state. The blood channels are distended with blood, enlarging the turbinals until the entire nasal cavity is filled and the support of the rigid bony walls of the nasal chamber is reached. The bony walls will not yield to the pressure of the expanding mass, but the cartilaginous septum often does, especially in the young subject. But when the patient turns, if the opposite turbinal be of equal size and expanding capacity the reverse direction of pressure will push the septum back to the centre line, or even to an equal degree beyond. This is illustrated in the diagrammatic sketch of Case XII, a lad of eighteen. If one turbinal be smaller and less extensive in expansion than the other the septum will be pressed farther and more forcibly one way than the other and deflection will result. The large turbinal will grow larger, the small turbinal smaller. Again, if the patient sleep more on one side than the other the continual pressure of the engorged turbinal on the pillow side will result in permanent septal deviation. As the septum is pushed farther over, the turbinal follows by permanent enlargement due to hyperplastic deposits left at each night's engorgement like the alluvial deposits at each rise of the Nile. The hyperplasia is doubtless accelerated by an occasional acute coryza. This explains the pernicious tendency of the turbinal to fill the space left by the deflecting septum. It is not a physiological compensation. It is a pathological condition. The turbinal in thus taking up the increased space it makes for itself, behaves like a polypus, which we have all seen to have deflected the septum in its expansions. Yet at the time of inspection it is always freely movable and is not wedged tightly as one might expect from the deformity its increasing bulk produces. One of the

most convincing series of observations proving turbinal pressure to be an important etiological factor in septal deviation is this: Of twenty persons examined who habitually sleep on one side exclusively, eighteen (90 per cent) showed a deviation to the opposite side. Sixteen of these cases had hypertrophic rhinitis of various degrees of severity, four were normal; but all showed a permanent imprint where the septum was pressed upon, with more or less of a ridge or ecchondrosis anterior to the pressed area. These are so constant as to be often called normal. Case XIII was a football player of seventeen years, whose accidentally fractured septum I replaced carefully every day for three days, only to find each



DIAGRAMMATIC.

morning the right deviation shown at Fig. 9. Learning that he slept chiefly on his left side because of the offensive breath of his bedfellow, I determined to investigate. Inspection after an hour's sleep on the left side showed the condition sketched at Fig. 10. The turbinal was caught in flagrante delicto, undoing my work. There was no hypertrophic rhinitis in this case. The engorgement of the turbinal on the pillow side was due only to hypostatic congestion, which numerous observations convince the writer occurs in the normal as well as in the hypertrophic turbinal. In his early days the writer was confronted with Case XIV, Fig. 11. He cocainized to examine and found the condition shown at Fig. 12. There seemed plenty of room to replace the septum.

He considered the condition one of soft hypertrophy, and, following the teachings of the day, applied the chemical and the equally useless electric cautery; then after healing proceeded with the septal operation. The immediate result was fair, but the patient returned two and one-half years later as badly obstructed as when first seen. (Fig. 11.) A radical right inferior turbinotomy, followed after healing by a Watson septal operation gave a perfect and permanent result as shown at Fig. 13, sketched three years later. In one case (XVIII) the writer obtained a very satisfactory result in a greatly deviated septum by a radical inferior turbinotomy on the concave side, followed, after healing, by the removal of a spur and a thorough breaking up of the resiliency of the septum with Sajous' forceps. This last operation was done just at the onset of the expected annual attack of "hay fever." The turgescence of the untouched inferior turbinal on the convex side pushed the septum over past the middle line and kept it there. (Fig. 16.) This is given for the lesson it teaches as to turbinal pressure in relation to septal deviation and the correction thereof. It is not a good example to follow for two reasons. First, at the onset of a vaso-motor coryza is an undesirable time to operate; second, the Sajous operation is not as good for this kind of deformity as the Watson or Watson-Gleason operation, neither of which were then devised. Case IV shows, in a practically normal nose, the permanent imprints (a, Fig. 16) of turbinal pressure during sleep. These imprints, with the ecchondroses and hypertrophies that mark the border of the imprint, including the septal tubercle, are so nearly constant as to be regarded almost as normal. They are due, in the writer's opinion, to turbinal pressure. Hypertrophies on the vomer posteriorly, due to the same cause, but not quite so constant, have been referred to in a former paper.¹ As there pointed out, it is useless to remove ecchondroses and hypertrophies of the septum and leave the swelling turbinals that cause them.

Now all the foregoing cases point clearly to the fact that great pressure is exerted periodically upon the septum by the turbinals during engorgement. As to the amount of this pressure mathematically expressed the writer is unable to give data. Anyone having time for laboratory work on the living human subject

¹Jour. Amer. Med. Assn., May 25, 1901.

can readily determine it experimentally. It must be many ounces to the square inch, estimating from the pressure necessary to indent with a probe the relaxed and swollen turbinal in coryza and "hay fever." Leaving this for the experimenter to determine, we have abundant clinical evidence, some of which is diagramed here, to prove conclusively that the pressure is sufficient to produce a permanent deviation of the cartilaginous septum. When the rigidity of the bony septum is temporarily destroyed by accidental or operative fracture, deflection is quickly and easily accomplished by the powerful turbinal pressure. It might be argued against the ground here taken as to turbinal pressure being one cause of septal deviation, that the turbinal on the convex side could push as well as its fellow on the concave side, but it must be remembered that on the convex side the turbinal is small and often atrophied, while its fellow is large and hypertrophied and of greater vascularity, consequently both more extensive and powerful in its inflammatory and its passive nightly expansive excursions.

Now if the facts here set forth be accepted how shall we prevent the failure of our corrective operations? The writer's answer is: Precede every operation for deviation by a turbinectomy, or very radical turbinotomy of the inferior turbinal on the concave side. (Rarely the middle turbinal will require operation also). If a turbinotomy be done, it must include a fringe of bone to bind down firmly the remaining tissue, and conservatism will lead to failure of the following septal operation. If the turbinal operation be sufficiently radical, there will be no need of a Mayer, Kyle or Asch tube, nor of packing, in the convex side to keep the septum in its new position. The last thirty consecutive cases operated by the writer (who is of indifferent operative ability), have been perfectly successful without any support whatever. The only things that could displace the limp replaced septa were eliminated when the preceeding radical turbinotomies were done. It might be argued that every case of septal deflection does not need a turbinectomy. It is thus the surgeon is deceived. There seems to be ample room to replace the septum, and yet leave sufficient space. Let the skeptic go at night while the patient sleeps with the concave side next to the pillow. He will find there is no room at all. The functions of the turbinals as far as we know them (warming, moistening and cleansing the inspired air) can only be performed when

there is a free channel for the passage of the inspired air. If the nostril be obstructed on one side by the deflected septum and on the other by the swollen turbinal the patient will sleep with his mouth open and the turbinals will be functionless. Anyway, if too much of the turbinal be removed it will grow again to a certain extent as seen in Fig. 16, where a very adequate turbinal was developed in one year from a stump. The writer is aware that the text books are opposed to him in this, most of them agreeing with Greville McDonald, who says that hypertrophy of the inferior turbinated body in these cases "Would appear to be a physiological attempt to compensate for the abnormal width of the fossa and should not lightly be interfered with." This is the foundation of failure in the correction of septal deviation.

The writer begs to sum up the following conclusions from his observations :

The turbinated bodies, in health and disease, swell at night during sleep, the swelling being greatest in the inferior, and on the side next to the pillow.

This periodical swelling, aided by the swelling incident to acute coryza, acute and chronic rhinitis, etc., is often an etiological factor primary or secondary, in septal deviation, both before and after operation, the deviation being usually of the cartilaginous septum, but often of the anterior bony portion as well. This etiological factor is usually overlooked because it occurs in the night, disappearing prior to office examination.

In certain cases the patients sleep on one side habitually, thus the turbinal pressure on the septum is always in one direction. In other cases one turbinal being larger and more expansible than its fellow of the opposite side, periodical active and passive, as well as the inflammatory turgescences of corzya, rhinitis, etc., will push the septum into a position of deflection which in time becomes permanent, while the larger turbinal by hyperplasia becomes larger; which change is pathological. The idea that it is a physiological compensation and should not be touched is the foundation of failure in attempts at correction of septal deviation.

Almost every case of deviation demanding operation requires resection of the inferior turbinal on the concave side for two purposes. To secure immediate and permanent correction of the septal deviation, and to secure adequate nasal respiration during sleep.

31

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It is an error to base the estimation of the adequacy of the nasal respiratory channel on either the patient's statement, or the apparent size on inspection of the channel, whether the parts be co-cainized or not. If the imprint of the inferior turbinal is seen on the septum, it is a certain indication for a radical resection of the inferior turbinated body (including a fringe of bone) on the concave side. "Soft" hypertrophies will expand at night and push upon the septum, yet shrink so small as to leave a large, free and open channel during the day. They often do more harm than "hard" hypertrophies, as they are often even more expansile. If left untouched, or what amounts to the same thing, if temporized with by the utterly useless galvano-cautery, the septum may as well be let alone, for the deflection will sooner or later reappear and be worse than ever. If the resection of the turbinal be sufficiently radical there will be no need of a Mayer, Asch or Kyle tube, nor of packing to hold the septum in its new position.

Whether the claim that many deviations are the result of turbinal pressure be admitted or not, no surgeon who has ever tried the rule here laid down for the successful correction of deviations will deny the ease and certainty of obtaining satisfactory results. When, after the removal and healing of the inferior turbinal, the resiliency and redundancy of the deviated septum are properly overcome, and the septum is placed in the median line, it will stay there. We will have taken away the only thing that can displace it. Let the skeptic not theorize. I would ask him to go home and take the case that failed of cure, cut out the inferior turbinal on the concave side, and after this is healed do his septum operation over again and note the result.

OPERATION FOR THE REMOVAL OF SEPTAL SPURS.

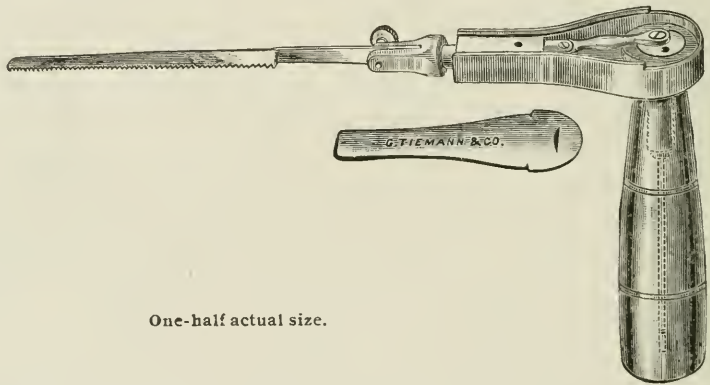
BY MELVILLE BLACK, M. D., DENVER, COLO.

The removal of spurs from the nasal septum has occupied a prominent position among nasal operations since the discovery of cocaine. The technique of the operation varies with the operator, no matter what method he may elect to use, and the success or degree of success resulting does not depend so much upon the method as upon the skill of the operator. If a man has no mechanical skill he will soon learn that operations upon the nose, and especially the septum, do not result satisfactorily. He possibly will condemn such operations in general. He may honestly believe that those who advocate them are deceiving themselves. He has found that topical applications, and cleansing methods have given favorable results in cases where operations have failed, both in his hands and in the hands of others. We rarely see each other's successful cases. We are more likely to see our own, and the other fellow to see our failures. If we promise brilliant results in a case in which someone has already failed, we may learn after our own vain efforts that the former rhinologist was a better man than we thought. The point is that no amount of operating nor any amount of treatment will relieve some patients. Their underlying vicious habits may frustrate all our efforts to relieve them until we can gain their co-operation in correcting some of these evils. There is no one way of curing diseased nasal passages, be it operative, non-operative, or systemic. Each has its place, and in the hands of an all-round man they all may be used to advantage.

The many instruments invented for the removal of septal spurs stand as evidence that there are a great many operators in the rhinological field. Personally I have found no instrument so universally satisfactory as the saw. I do not mean that I am willing to discard the others entirely for it. The chisel, the draw shave, the rasp, the trephine, and burr, and even scissors, all in their places are of distinct value. In the selection of a saw, my preference is for the Bosworth blade, which cuts equally on the push or pull. I am just carpenter enough to like such a saw, because it

complies with the simplest common sense blade of a carpenter's kit. I have never been able to see the advantage of a saw that cuts on the pull, and can see very decided disadvantages in a saw that cuts on the push. I have always believed that if some carpenters were to study surgery they would make good operators, and that if some surgeons would leave their professions to be carpenters they would make dismal failures as such.

We are inclined to take advantage of anything that will insure more accuracy in operative work in the nose. We have accordingly hailed with delight the ischemic effect of suprarenal, because by its use we are enabled much better to see what we are doing. If a spur is large it may be impossible to see that beyond it, the septum may be thin and deviated towards the same side. With a hand saw how easy it is to push the end of the blade through this



One-half actual size.

deviation and after sawing through the spur find it still attached. If it is forcibly removed with forceps a large perforation in the septum may be left. If its detachment is attempted with scissors or by further use of the saw the final removal of the spur is prolonged much to the annoyance of the patient, and the site of the operation is not as smooth as it should be. Before enumerating other instances of septal spurs wherein the use of a saw used by hand may prove unsatisfactory, let me speak of my electro-motor nasal saw. I first published an account of it in this Journal in July, 1896. In November, 1897, I published again in this Journal another account of it with some improvements that I had made. Since then I have not had occasion to modify it in any way. For a full description of it see the article above referred to.

This instrument has given me the very greatest satisfaction in the removal of septal spurs of all shapes, sizes and situations. Until recently I used it with the regular dental flexible shaft and hand-piece of S. S. White's, but I was more or less annoyed by some jerking of the saw due to the flexible shaft. Lately I have been using a Detroit shaft and hand-piece. Any dentist can tell you what it is, but its description is a little difficult. Suffice to say that the hand-piece is operated by a cord rather than a spiral shaft. With the Detroit hand-piece there is absolutely no jerking of the saw. It runs perfectly smoothly, and without noise. There is absolutely no spur that occurs on the nasal septum that I can not remove with this saw. The spur with the deviated septum behind it can be removed without the least danger of perforating the deviation, because it has only a quarter-inch stroke if preferred. Spurs on the bony septum situated high up are very difficult of removal by hand because of the difficulty in this situation of obtaining long enough stroke. With my saw there is not the least trouble; such a spur is just as easily removed as though it were on the cartilaginous septum. The greatest advantage I find with it, after using it six years, is that a spur can be so accurately removed. The line of severance of the spur from its base can be controlled perfectly, leaving a surface entirely even and smooth. This is of distinct advantage in the after-healing, no matter whether or not the mucous membrane be dissected up before the removal of the spur. The spur is rapidly removed. This may be of considerable advantage at times. Some patients become very faint during a prolonged nasal operation. I can remove a large bony spur in one-fourth the time with this saw than I can by hand. By hand the operator usually saws up or down, according to the ease with which he can get his saw to take hold above or below. With my saw, no difference how slanting the surface is, it will take hold without slipping.

At one time I used the trephine for the removal of many spurs because it was difficult to get the hand saw to take hold. I never liked the trephine for this purpose because of the uneven surface that it left, and because I have always felt that perforation of the septum was easy. Since the perfection of my saw I have never had occasion to remove a spur with the trephine.

VAPOR MASSAGE—ITS ORIGIN AND USES.

BY GEO. T. HAWLEY, M. D., CHICAGO.

Among the many improvements in our methods of treating affections of the ear, nose, throat and lungs that have been introduced during recent years, Vapor Massage is one of the most important.

Although comparatively little has been written on the subject, Vapor Massage is rapidly coming into general use, especially among that progressive class of physicians who are always on the lookout for improved therapeutic methods. As a result, many are attempting to employ this form of treatment without having a comprehensive knowledge, either of the form of apparatus or the details of manipulation which are essential to success; and as there are several inefficient outfits on the market, some have been disappointed in the results secured.

The credit for introducing this valuable method of treatment and for designing the first, and up to this time the only efficient apparatus for its administration unquestionably belongs to Dr. H. M. Dunlap, who states that in 1888 he began the experiments which lead to the complete development of the method of treatment to which he has applied the term "Vapor Massage," and which, according to his definition, consists in the application of nebulized vapor under pressure with more or less frequent interruptions, so as to produce a series of distinct and positive impulses.

The first complete apparatus designed by Dr. Dunlap for this purpose was constructed by the Globe Manufacturing Co., in 1895, and was exhibited by them in connection with the meeting of the Mississippi Valley Medical Association, held in Detroit in October of that year. This apparatus and methods of use were described by Dr. Dunlap in a paper read before the Michigan State Medical society in June, 1896.

A brief description of this apparatus and its essential features is necessary at this point for a thorough understanding of the subject.

The accompanying illustrations represent the apparatus that has been in use by the writer for some time, and is essentially the same as the original designed by Dr. Dunlap, and was made by the Globe Manufacturing Co., of Battle Creek, Mich.

Fig. 1 shows the complete instrument ready for connection with a compressed air cylinder by means of the usual air pressure tubing, which should be attached to the inlet valve "K."

"H" is a circular air supply tube to which the individual nebulizers "E" are attached. The air supply to each nebulizer is controlled by the valves "G," and each nebulizer is provided with a nebulizing or spray tube as shown in Fig. 2.

The nebulizing tube is a very essential part of the apparatus. It is so constructed that it will operate with very low air pressure, and will spray balsams, oils, and all other fluids without becoming clogged.

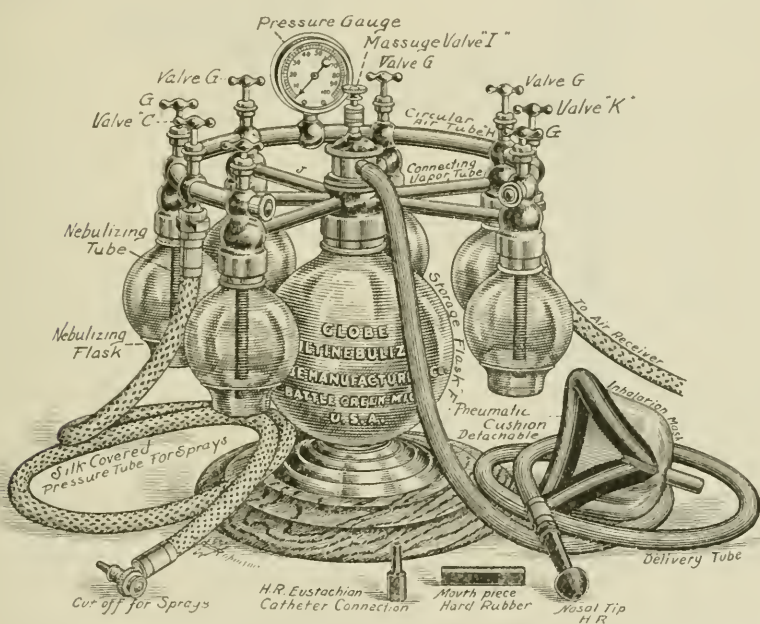


Fig. 1. Complete Four Flask Globe Multinebulizer.

The nebulized vapor from each nebulizer is discharged through separate tubes "J," which are lined with hard rubber, into the central flask "F." The provision of separate conducting tubes is important, as the condensation which always occurs, is deposited in the central flask, and when one common conducting tube is used the condensation from one nebulizer is deposited in adjoining ones, causing a mixing of the fluids.

The outlet of the central flask "F" is controlled by an ingenious valve "I," by means of which the nebulized vapor can be stored

and delivered under any desired pressure, either in a continuous or interrupted current, for the administration of Vapor Massage.

The construction of this massive valve "I" is shown in Fig. 2, having a section cut away. When the instrument is to be used for inhalations, etc., the valve is held open by screwing down the collar "N." If it is to be used for massage, the collar "N" is screwed

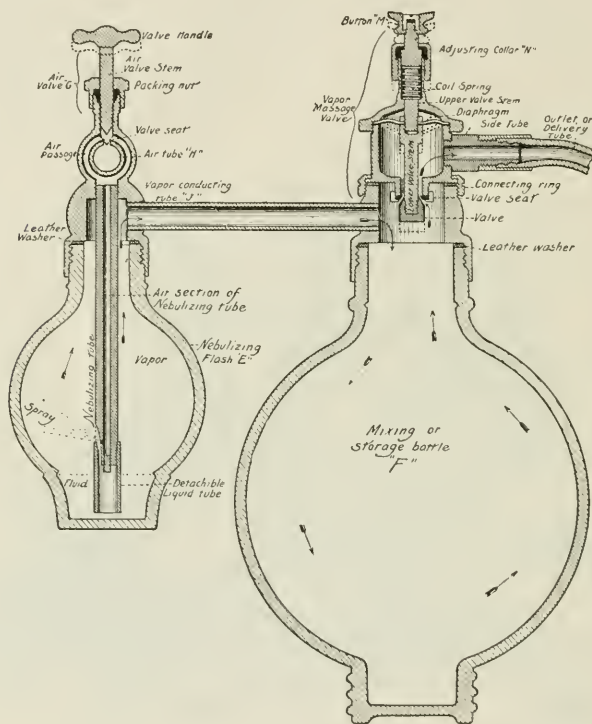


Fig. 2. Nebulizer—Sectional View.

up until the valve is closed by action of the coiled spring, and the vapor is then stored under pressure, but may be released by pressing or tapping on the button "M," which opens the valve; but is again closed by the spring the moment the button "M" is released. When a very gentle effect is desired, it is not necessary to reduce the initial air pressure with which the instrument is operated, but is only necessary to screw the collar "N" up until it comes almost in contact with button "M," serving as a stop to limit the opening

of the valve. In this way the vapor can be delivered in the gentlest zephyr, or with a hammer-like impulse, regardless of the frequency of the impulses, and without varying the initial pressure. Without this perfect valve control, and an elastic volume of compressed vapor as provided by the large central flask, Vapor Massage cannot be safely and successfully administered. And in selecting an outfit, these points should be the first and most important consideration.

An inhalation mask, hard rubber mouth and nasal tip, and catheter connection, are provided as shown in Fig. 1. This style of instrument has all of the metal parts protected from contact with the medicinal agents, either fluid or vapor, which is very desirable as it prevents chemical action or corrosion. Taken as a whole, it is all that could be desired for the purpose.

Vapor Massage, when properly administered, combines the therapeutic action of judiciously selected medicaments, applied directly to the affected tissues, with that of manipulation, the effect of which on the circulation, absorption, nutrition and other vital processes is well known through the benefit derived from the use of the ordinary manual massage when applied to the accessible parts of the body, Vapor Massage reaching those points which are inaccessible to the ordinary forms of manipulation.

With a suitably constructed apparatus, both the medication and manipulation can be efficiently applied to the naso-pharynx and connecting sinuses, the middle ear and Eustachian tubes, the larynx, bronchial tubes and lungs, giving a very wide range of usefulness.

In affections of the naso-pharynx, the parts should first be cleansed with a warm (never cold) antiseptic alkaline wash applied by means of a spray or douche. This may be followed by any ordinary form of application, if desired; then by Vapor Massage in which the medication can be made to meet the requirements in each individual case, either sedative, stimulant, astringent, or alterative, or a combination as may be necessary. The application of the vapor under pressure with the vibratory manipulation adds very materially to the action of the medicinal agents in reducing congestion and restoring normal circulation; also in stimulating absorption of exudates, etc. It brings about a healthy and normal action of the mucous membrane, acting also on the submucous structures. It opens the canals leading to the various sinuses where they are obstructed by congestion or thickening of the lining membrane, and carries the medication to those cavities which are

very difficult to reach by other means, but are frequently the seat of catarrhal conditions which sometimes produce obscure and very annoying symptoms. Catarrhal obstruction of the Lachrymal ducts is often materially benefited by persistent treatment. Many cases of hypertrophy of the turbinated bodies can be cured without the use of cautery or other operation, thus avoiding all destruction of tissue, which is very desirable. Adenoid growths can often be reduced by using strongly astringent and alterative remedies.

In applying Vapor Massage to the naso-pharynx, the massage valve "T" should be adjusted so it will close, retaining the vapor under pressure in the central storage flask, but will open just sufficiently to produce a decided impulse when the button "M" is suddenly pressed downward. The nasal tip "C" is attached to the delivery tube and applied firmly in one nostril, the other being closed with the finger. The patient should now be instructed to repeatedly pronounce the word "hook," "hook," "hook," and each time the button "M" of the massage valve should receive several light, sharp strokes with the hand, each stroke briefly opening the valve and allowing the escape of enough of the compressed vapor to produce a decided impulse in the naso-pharynx.

For middle ear affections the massage valve should be adjusted with the collar or stop "N" very close to the button "M" at first, so as to give a very slight opening; and if the catheter is to be used it should be passed in the usual manner, and the delivery tube attached by means of the connection provided for this purpose. A single pressure on the button "M" will produce inflation, as with the Politzer Bag, while a series of quick, sharp strokes will produce the massage or vibration effect. The diagnostic tube should be used; and if at first the pressure is insufficient to produce the desired results, the adjustment of the valve should be changed to give a slightly increased pressure as may be necessary.

In this way there is no danger of using too much pressure, as it can be regulated according to the results desired in each individual case; and for this purpose the adjustable valve is very essential.

There are various conditions of the middle ear in which Vapor Massage is very useful. It assists in overcoming adhesions, rigidity of the ossicles and contraction of ligaments just as manual massage will benefit similar conditions of an elbow or knee joint. It is especially valuable in acute otitis media, either catarrhal or purulent. If employed early, using camphor menthol and cocaine in oil, with very gentle pressure—just enough to keep the tubes open

—will generally reduce the pain and inflammation and prevent rupture; and if rupture occurs, is the best possible means of keeping the drum aseptic and free from discharge; also prevents adhesions and other complications.

Vapor Massage can be applied to the middle ear very efficiently in a great many cases without the use of the catheter, the manipulation being the same as for naso-pharynx. In every instance, whether the catheter, is used or not the naso-pharynx should first be thoroughly cleansed with an antiseptic alkaline wash. This is very important. In many cases of so-called middle ear catarrh it is necessary to apply the treatment frequently and with as high a pressure as can be tolerated without producing soreness or discomfort; unsuccessful results are often due to a want of vigor in pushing the treatment. But in all acute inflammatory conditions, the applications must be made with extreme gentleness, using just enough pressure to keep the tubes open and carry the soothing and sedative vapor into the ear drum. The use of Vapor Massage applied in this way, together with thorough, hot douching of the external canal, will control almost every case of acute inflammation if the treatment is commenced before suppuration actually begins.

In pulmonary affections Vapor Massage finds one of its greatest fields of usefulness. The effect on the pulmonary circulation is most decided; congestion is promptly relieved; irritation of the mucous membrane is allayed; the products of inflammatory action are more rapidly absorbed and eliminated; and the nutrition of the tissues is greatly improved by the combined action of manipulation and suitable medicinal agents directly and efficiently applied to the affected parts. Collapsed and inactive portions of the lungs are brought into activity; accumulated secretions are thrown off; expansion and respiratory action are increased with a correspondingly increased oxygenation of the blood.

Having in mind the action of Pulmonary Vapor Massage as outlined above, it will at once be seen that this is one of the most rational methods of treatment for pulmonary tuberculosis in which all of the normal functions of the affected tissues are deranged, and where, also, the efficient application of antiseptic agents is so urgently indicated. The manipulation favors the absorption of the antiseptic into the tissues, thus exerting a more direct action on the encapsulated bacilli. While it may not be possible in this way to destroy the bacilli, a strong inhibitory action is certainly exerted, and the surrounding uninvolved tissues are fortified to re-

sist the advance of the disease into new areas. If at the same time everything possible is done to build up the general nutrition, the chances of recovery are greatly increased.

The action of Vapor Massage in bronchitis, broncho-pneumonia, and in all congestive or inflammatory affections of the lungs and bronchi is very prompt and satisfactory. It is especially serviceable in cases of unresolved pneumonia, and restores the functions of a collapsed lung after pleural effusion. Is also useful in many other conditions which will readily suggest themselves.

In cases of bronchial and pulmonary congestion, there is very frequently a sense of oppression, as if there was a heavy weight on the chest. This is promptly relieved by Vapor Massage, giving way to a feeling of buoyancy which is very much appreciated by patients.

The importance of promptly removing congestion or inflammation of the lungs in every instance cannot be too strongly insisted upon, not so much on account of the immediate gravity of the condition, but because in these conditions the vitality and resistance of the tissues are impaired, and therefore susceptible to tubercular infection. Careful observation reveals the fact that very many cases of tuberculosis begin with a mild attack of "cold in the lungs," or an attack of "grippe," the prompt relief of which would have prevented the development of the more serious condition in many instances.

For Pulmonary Vapor Massage the collar "N" is adjusted so as to allow the valve "I" to close, and yet permit a free flow of vapor when the valve is opened, having the vapor stored at 15 or 20 pounds pressure. The patient holds the mouth-piece with the lips, closing the nose with thumb and finger, and inhales while the operator slowly opens the valve "I" permitting the outflow of compressed vapor, until the patient's lungs are fully expanded almost to the point of forcing the mouth piece from the lips. The valve is then allowed to close for a few seconds; is then given several sharp strokes, the impulses of which are transmitted through the medium of the compressed vapor to the entire pulmonary area. This process should be repeated several times at each sitting.

The application of Vapor Massage should, in most instances, be preceded with an application of the vapor at normal atmospheric pressure of several minutes' duration, so as to insure thorough medication of the parts. It is also advisable to supplement the office treatment by having the patient use a hand nebulizer several times daily.

THE NOSE AND THROAT IN THE HISTORY OF MEDICINE.

BY JONATHAN WRIGHT, M.D., BROOKLYN, N. Y.

(Continued from page 108.)

THE NINETEENTH CENTURY—THE PRAE-LARYNGOSCOPIC ERA.

I do not know how I can better usher in our story of a new epoch, than by going back into the Eighteenth century to pick up the thread of the ideas which have dominated the latter part of the Nineteenth. This I shall frequently have to do in matters more immediately cognate with our subject.

In 1779 Vicq D'Azir,* announced, before the Academy of Science in Paris, that he had been able to trace the intermaxillary bone in the human foetus, and he had Darwinism in his mind when he made the reflection that Nature seems always to model her works after a primitive ideal.

The Intermaxillary Bone in Man.

In 1784 Goethe wrote to his friend Herder: "I have found neither gold nor silver, but that which gives me an inexpressible delight, the os intermaxillare in man." This had been, apparently by an accidental blunder, as we have seen, described by Galen and depicted by many of the anatomists of the Renaissance. This had been, if we may be allowed the expression, a bone of contention for many centuries. The fact that man was supposed to have no intermaxillary bone was one of the arguments by which he was distinguished from the brutes, but Goethe believed in the unity of nature, and six years later he wrote his "Metamorphose der Pflanzen," in which is contained the philosophy of Spencer and the biology of Darwin.

And now we must plunge at once into the medical history of the Nineteenth century, returning, as I have said, many times to pick up the threads of our story amidst the records of past ages.

It is still impossible to comprehend the historical significance of the phenomena of the Nineteenth century just passed. We are just leav-

* Oeuvres de Vicq D'Azir, T. IV, p. 159.

ing it behind, and its proximity in the historical landscape gives us no opportunity for philosophical perspective, while the lifeless chronicle of events is a dreary work which is to be avoided if possible.

Bichat. The French Revolution, the great cataclysm which finally and irrevocably burst asunder the bands of ecclesiastical and political tyranny, horrible and frightful as was the catastrophe and its immediate results, was the denouement of that series of events to which the Renaissance was the prelude in the history of Civilization. In the Sciences, and especially in Medicine, the beginning of the fruition of this enfranchisement of thought, of speech and action did not become apparent until near the middle of the century. Coincident with the social and political upheaval in France appeared the genius which shaped the beginning of the new life in Medicine as radically as did Napoleon those events, the chronicling of which is called History.

Bichat was the first to turn the torrent of eager study and investigation of biological secrets toward the elucidation of the physiology and pathology of the separate tissues, as distinguished from the anatomical localities and organs of the animal body. Before Bichat, since the time of the Arabs, diseases were divided according to their situation, the head, the chest, the stomach. Morgagni first classified disease according to the lesions of the different organs of the body. Bichat, continuing the differentiation, described the different tissues of which the various organs were made up.

Since the revolt of Cullen and his predecessors from the old humoral pathology, we have been practically upon a basis of the Solidism which he had carried to such extremes. It is only within the last few decades that we have begun to perceive that all such divisions are impossible, all regions, all organs, all tissues, all of the body fluids are too intimately associated one with the other, to allow us to single out, in disease, any single unit as the entity exclusively deranged; but we may note a tendency in the recent trend of research in the problems of immunity for the pendulum to swing back again, after nearly two hundred years, to the domains of humoral physiology and pathology.

Bichat sketched the outlines of the study of physiology and pathology which were later filled out by the labors of the Germans, the schools of Johann Möller and of Virchow.

In his "Anatomie Pathologique" he considered the functions and the morbid states of the serous and of the pituitary membranes, but he insisted* that not only should pathology be studied from the

* *Anatomie Pathologique. Dernier Cours de Xavier Bichat d'après un Manuscrit Autographe de P. A. Beclard—1828.*

standpoint of the system of tissues affected, but from that of the character of the lesion as well. It is true, here as always, that this thought had existed in the minds of many before Bichat, but it was left to him to inaugurate its practical application. He, himself, had little opportunity in his short life to even begin the Herculean task of filling out this comprehensive schedule. He died when just turned thirty.

Before reviewing the comparatively few steps in advance taken in the knowledge of our subject during the prae-laryngoscopic era of the Nineteenth century, some reference must be made to special treatises.

Special Treatises.

In the early part of the century considerable attention was devoted to the nose as the organ of olfaction. Indeed, since the decline of the Galenic physiology and the establishment of the doctrines of Schneider, the fact had often been lost sight of altogether that the nostrils were an essential part of the respiratory tract. When it became evident that the air did not ascend to the brain, and the secretions of the latter did not drip downward in catarrh, the warming, dust freeing, moistening functions of the nose in respiration, upon which Galen laid the proper stress, sank from view and have only again been brought into prominence within the last two decades. We have seen that the mistaken idea of some of the early anatomists, as to the olfactory function of the accessory sinuses, long lingered after the error had been pointed out that they prepared the air for the brain. This idea of the nose solely as the organ of smell probably led to the prompt acceptance of the organ of Jacobson as an occasional diverticulum in the mucosa serving for olfaction. The great Cuvier laid the Danish anatomist's communication* before the Institute of Paris in 1811. Ruysch†, in 1703, pictured the orifice in the nose of an infant he had dissected. Morgagni‡ refers to Steno as having noted this organ in a sheep. He seemed to connect it in some way with cases, which Thomson (l. c.) rightly regards as instances of the escape of the cerebro spinal fluid from the nose. Sommering also noted it before Jacobson's paper.§

Olfaction.

Jacobson's Organ.

Deschamps in 1804 published the first separate "Treatise on the Diseases of the Nasal Fossae and Their Sinuses." Naturally prominence was given to the physiology and pathology of olfaction, and

Deschamps.

* Descriptive Anat. d'un organ observe 'dans les Mammifères. Ann. de l'Inst. d'Hist. Nat. XVIII. 1811, p. 412-24.

† Ruysch: Thesaur. Anat. III. Tab. IV, fig. 5, A Edit. 1744.

‡ Morgagni: De sedibus et Causis Morborum. Lib. I. De Morbis Capitis 21.

§ For further information as to the history of the organ see "Nasenhoble und Jacobsonsches Organ," Mihalkovics, 1898.

Deschamps declared that the filaments of the olfactory nerve may easily be traced to the middle of the nasal fossae, but he denied absolutely, as a result of experimentation, that the sinuses contribute anything toward the function of olfaction. This had been previously less emphatically asserted by Richeraud.* Notwithstanding these positive statements, such an eminent authority as Majendie in 1817 inclined to the opposite opinion. He says: "The larger size of the sinuses seems to coincide with a greater power of olfaction; this at least is one of the most positive results of comparative anatomy." He, however, admitted that the olfactory filaments had never been followed into the sinuses nor found in the mucosa of the inferior turbinated bone, nor on the inner surface of the middle.

Deschamps's work of more than 300 pages is one of considerable interest, not only because it was the first separate book on Rhinology, but because it may be supposed to represent fairly well the state of knowledge at the beginning of the century as to intranasal disease. He says nothing whatever of anterior rhinoscopy, nor of a nasal speculum, though, as we have seen, traces of both had from time to time appeared in medical annals. Notwithstanding this most important, and other scarcely less noticeable omissions, he professed to include all the matter of interest known to medicine in regard to the nasal fossae and their annexa in his book. He distinguished the ordinary tumefaction of the mucosa from the nasal polyp, and for the former he recommended the use of oiled bougies in dilating the obstructed channels of the nose. He divided nasal polypi into (1) fungous and vascular. (2) Mucous and lymphatic. (3) Scirrhus. (4) Sarcomatous. His methods of treatment were, (1) The local application of astringents. (2) Excision with a guarded bistouri. (3) Avulsion with the forceps, to which he devotes considerable space. (4) The knotted thread he speaks of with ridicule. (5) Chemical caustics, nitrate of silver—"mercurial water" (Acid nitrate?)—butter of liquid antimony, and the actual cautery. (6) Ligature with a waxed thread and with wire of pure silver

These methods of operating he adapted to his different varieties of polypi, giving preference to the ligature. The wire loop adjusted with forceps and finger was, when in situ, tightened by pulling it through the eye of a probe or sound. The polyp was removed more by avulsion than by abscission. For ozoena, he recommended the application of the cautery when "the site of the ozoena permits;"

* *Nouveaux Elemens de Physiologie*, Vol. II, p. 57, 1802.

otherwise he abandoned the treatment of this disease to palliative measures. He confused essential ozoena with the syphilitic. Considerable space in this book is devoted to the consideration of sinus disease, principally of the maxillary antrum, but he recognized the painful symptoms of acute catarrhal inflammation of the frontal sinus. He speaks of simple inflammation of the maxillary sinus, also of polypous tumors, and of dropsy of that cavity. He counsels opening the maxillary sinus, in suppurative disease, through an alveolus of a bad tooth if it exists; otherwise to make an opening above the alveolar border, in either case, large enough to introduce the finger. He advised an even larger opening where there were antral polypi. He has nothing to say of ecchondroses or deviations of the nasal septum.

A very much more comprehensive work, especially in historical matters, was the work of Cloquet,* which was first published in 1821. It professes to be a work on olfaction, but as a matter of fact it is much more than that. Its 750 pages exhibit the enormous erudition of the author, who deals with his subject in the most exhaustive manner and from every point of view. It is an inexhaustible source, from which one may draw accounts of all sorts of phenomena related to the sense of smell. Not only is this its prominent characteristic, but it deals incidentally, much more fully than Deschamps' book, with the nose and its diseases. Membranous occlusions of the nostrils, fractures of the nose, deviations of the septum which he considered to be usually irremediable, rhinoplasty, are all more or less thoroughly discussed. Coryza, vasomotor rhinitis, rhinorrhœa, and syphilitic rhinitis with other affections are treated together, and not sufficiently differentiated to satisfy the modern reader. The same may be said of other chapters in the book. Thickenings of the nasal mucosa are considered in a page and a half. Cloquet.

These works of Deschamps and Cloquet were not illustrated, but we may note in England the appearance in 1809 of the "Anatomico-Chirurgical Views of the Nose, Mouth, Larynx and Fauces" by John James Watt. It contains some colored charts of the parts with an anatomical description of them. They compare not unfavorably as to accuracy, but are perhaps not so artistic as the later color plates which have been issued so frequently lately. They are the first colored plates with which I am familiar showing the anatomy of the nose and throat. Watt.

A few separate treatises appeared in the prae-laryngoscopic period on the larynx. In 1826, William Henry Porter published a small Porter.

* *Osphresiology*.

brochure in which he discussed croup, diphtheritis, œdematous laryngitis, phthisis laryngea, which he, like others, confused with syphilis of the air tubes, speaking at some length of the "mortification of the laryngeal cartilages." Traumatic laryngitis, foreign bodies and wounds are also discussed.* It is not accurate, therefore, to regard Albers' work as the first special work on the larynx.

Albers.

It appeared in 1829†. As Heyman has pointed out, it is a work of considerable value in that it collected what was known on the subject, but it is by no means exhaustive in that respect, and there is very little original matter in it. Of more value are the chapters he devotes to the subject in his later publications.‡ In his Atlas there are some striking drawings of laryngeal tumors. In other respects the works of Albers are noteworthy as almost the beginning of those publications on pathological subjects, which were soon to make the medical schools of Germany famous. In 1838 appeared the works of Ryland§ and of Columbat.|| Ryland speaks of croup as affecting children and the Diphtheria of Bretonneau as affecting adults. He refers also to spasmodic croup and hysterical spasm of the glottis, cases having been reported by Albers, Sir Charles Bell and Porter. Tumors of the larynx and tracheotomy occupy considerable space in his book. Columbat invented a clumsy instrument for opening the mouth and depressing the tongue, which he called a stomatoscope, also some devices of inferior interest for cutting the tonsils and the uvula.

Ryland and
Columbat.

Piorry.

A very much more interesting work, and one evincing more original though frequently erroneous ideas, is the one by Piorry published in 1844.¶ He opens his work with the remark that the diseases of the nose are unfortunately usually not considered in treatises on diseases of the respiratory system, and he insists on the doctrine, which received no help even from the advent of laryngoscopy, that not only many diseases of the larynx but also of the lungs depend upon morbid conditions of the nasal passages, nasal obstruction, so-called by him rhinostenoma, one of the forms of which we

* I am only familiar with the second edition published in 1837. Holmes speaks of the first edition as too limited in scope to be compared with the treatise of Albers, which appeared in 1829. However that may be, it is the first separate treatise on the larynx since the little work of Codronicus two and a half centuries earlier.

† Die Pathologie und Therapie der Kehlkopfkrankheiten. Leipzig, 1829.

‡ Beobachtungen a. d. Gebiet. der Path. 1836. Atlas der Path. Anat. 2te Abth. 1842.

§ A Treatise on the Diseases and Injuries of the Larynx and Trachea, by Frederick Ryland.

|| Traité des Maladies et de la Hygiène de la Voix.

¶ Ueber die Krankheiten der Luftwege, von A. Piorry. It seems to have been written but never published in French, the German edition being the only one I have found noted.

recognize in a deviated septum, the other being alternating vaso-motor stenosis. He proposed percussion, then a young science, for investigating the accessory sinuses. He described with considerable accuracy many of the sequelae of nasal obstruction and mouth breathing, including aural symptoms from closure of the Eustachian tube, and pulmonary changes, such as chronic dyspnoea and asthmatic attacks. He referred the cause of nasal disease to systemic affections. Crusts in the nose are to be removed after soaking in oil. He advised the introduction of bougies even in acute attacks. He described the dilatation of the alae nasi with a forceps to allow the light to fall in, but admitted that it was impossible to see very far by this means. Stethoscopy was also recommended by him in the diagnosis of intranasal conditions. He described rhinitis attending cases of the grip, which was prevalent in the first half of the century. On the whole this book exhibits a surprising amount of information in regard to intranasal conditions at an epoch when anterior rhinoscopy was feebly developed, and posterior rhinoscopy was unknown. Some of his ideas have not received the sanction of modern rhinology, but may not on that account be the less true. He declared that one of the causes of rhinitis was the cutting of the vibrissæ in the vestibule of the nose which should filter the dust particle from the air. He asserted that water was injurious to the whole upper respiratory tract with the exception of the naso-pharynx, and syringing either the ear or the nose, especially with cold water, resulted in inflammation. Rhinitis thus frequently arose from bathing and diving. As treatment he urged the injection of oily or fatty substances in the nose. To such extremes did he go in this direction that he advised the anointing of the nostrils with oil while shaving or washing the face. The intranasal syringing of water he condemned very strongly except for the purpose of removing foul, stinking secretions. Nitrate of silver and various powders he recommended as medicaments for internal applications. His other therapeutic measures were of a general nature, in accordance with his views of etiology. Blisters, bleeding, purging, sweating, were the vigorous measures which were recommended for rhinitis, in keeping with the heroic treatment of his times. He confused ozoena with purulent disease of the accessory cavities. For intranasal operative procedures he refers the reader to the general works on surgery. His remarks upon affections of the larynx, trachea and bronchi, as one must expect in prae-laryngoscopic times, are confusing and of little value.

Nasal Bougies.

Evil Effects of
Water on the
Nasal Mu-
cosa.

Systems.

In the first half of the 19th century, began again the custom of including in one work, or in a continuous series, all the medical lore known to mankind, but instead of such a work being attempted by one author it was divided among several. In these early Systems and Handbuchs and Traités, the chapters on the nose and throat are lacking, or treated in the most cursory and incomplete manner. As an example of this sort of literature one may be cited wherein the following was published, just three years before Garcia announced the event, which at once shed a new light on diseases of the larynx.

Friedrich * says: "Unfortunately the methods of physical diagnosis do not allow, in diseases of the larynx and trachea, that extended application they do in diseases of the deeper parts of the respiratory organ."

Laennec's "*Traité de l'Auscultation Mediate*" in 1819, his invention of the stethoscope, and the rapid development of the other methods of the physical diagnosis of the diseases of the chest, doubtless did their part in stimulating interest and curiosity, which finally culminated in the application of inspection to the diagnosis of intralaryngeal lesions.

Auscultation
and Percus-
sion of the
Nose and
Throat.

We have noted Piorry attempting to apply Laennec's methods to diseases of the nose, and we find Friedrich attempting to explore laryngeal phenomena by means of palpation, auscultation and inspection of the epiglottis through the mouth. In Friedrich's chapters we find intelligent attempts at differentiating tubercular from syphilitic diseases of the larynx, but œdema of the glottis and perichondritis laryngea are for him, as for many later writers, still pathological entities. He speaks of paralysis of the glottis with aphonia as paraplegias, but of course he had no means of establishing a diagnosis except from rational symptoms.

To return now to the individual topics of interest in the development of our laryngological and rhinological knowledge, we may begin again with Bichat.

In the few notes which remain to us from the works of Bichat upon the histology of the diseases of the pituitary membranes, he cast but little light upon the subject. We may note, however, that he questioned whether ozœna was really an ulceration, but leaned to the idea that it was a diffuse inflammation. He speaks† of the liability of the mucous membrane of the larynx to become gorged with serum during inflammation. He succeeded by traumatism in

* Die Krankheiten des Larynx und der Trachea; Virchow's Handbuch der Spec. Path. und Therapie, 1854.

† *Traité d'Anatomie Descriptive*, 1802, T. II, p. 399.

producing this condition in dogs, but we look in vain for those details of the study of the respiratory mucous membranes, which later followed, from Bichat's initiative, in the works of Bretonneau and others.

In 1791 Fourcroy and Vauquelin had* examined nasal secretions, both in health subjects and in those suffering from coryza, and had noted the salts of lime and soda. According to him, the mucus was the same from all the mucous membranes, but Berzelius later, on the contrary, believed it to vary according to the locality from which it was taken. Majendie thought that the mucous glands are not necessary for its formation, but that it is found where there are none, and also after death.

These were some of the preliminary studies which, together with the direction given to medical study by Bichat, lead to Bretonneau's Treatise on Diphtheria. In the works of Matthew Baillie, which, though not collected until 1825, were of a considerable earlier date, may be found several accurate accounts of the post-mortem appearances in those dead of Croup.†

Bretonneau
and Diph-
theria.

Anglada says: "It is known that Napoleon, in 1807, on account of a sorrowful event, put the question of croup to the Assembly; numerous and important works followed." He offered a prize for the best essay on the disease, owing, it is said, to the death of a son‡ from it. Not only in France, but elsewhere, as we have seen, the disease was being more carefully studied. John Cheyne, in 1809, wrote on "The Pathology of the Membrane of the Larynx, and Bronchi," a treatise which is chiefly upon the lesions of Croup, under which title he also published a work.

It was not, however, until Bretonneau's publication, in 1826§, that any very great advance is to be noted in the nineteenth century in the study of Diphtheria. He recognized its specific character and thus gave it its name (p. 41-43): "From the impossibility of applying to a special inflammation, so well defined, a single one of the names which have been given to its variations, allow me to designate this phlegmasia by the name Diphtheritis, derived from ΔΙΦΘΕΡΑ" which means a skin, an exuvium.

* Annales de Chimie, Aout, 1791, Vol. X, p. 13.

† See also "The Morbid Anatomy of Some of the Most Important Parts of the Human Body," 1793, and "A Series of Engravings," etc., 1800, 111 Plate II, Fig. 1.

The word croup, first used by Home, is of Scottish origin, designating a membranous inflammation of the air passages, and is said to have primarily signified strangulation, but it is from a Gothic root, meaning to cry out, the term being applied to the disease probably on account of the altered tone of the voice.

‡ If this is so, it must have been an illegitimate son. Contsant in his Memoirs of the Private Life of Napoleon, mentions no such event as the death of an illegitimate child at this time.

§ "Traité de la Diphtherie," 1826.

His work gives by far the best description of the disease which had yet appeared, but even in its clinical manifestations the differentiation was much at fault. In addition to his own remarks on the disease, he transcribed the works of many previous writers, among them that of Samuel Bard. He had performed tracheotomy for the laryngeal disease, and was of the opinion that his was the first case in which it was successfully done, though he refers to the case in London reported by Borsieri which I have cited. Bretonneau's work produced a great impression upon his contemporaries, and it is one of the landmarks in the history of diseases of the throat. Shortly after its publication, we may note the report of a fatal case of nasal diphtheria by Billard*, but he does not give it that name.

The Epiglottis.

Bichat† from experimentation had come to the conclusion that the epiglottis was in no way essential to the production of the voice, which, however, was altered when he cut off the tops of the arytenoid cartilages, and was lost when he severed them from one another in the middle line. We have seen how gross an error had entered into the conception of the ancients in supposing the epiglottis served to keep solids from the larynx, but permitted fluids to enter it. It gradually was accepted as an efficient valve to keep the latter out also. Majendie refused to accept this on authority. He said‡ he himself was of the former opinion, except for the doubt that should always exist in the mind of the physiologist. On extirpating the epiglottis in dogs he found they swallowed fluids as well as solids quite as easily without it. Elsewhere§ he asserts he had observed the same phenomenon in two individuals deprived of the epiglottis by disease. He, therefore, concluded that it was not indispensable in deglutition. From various experiments on animals he did much, not only to elucidate the mechanism of swallowing, but the action of the intralaryngeal muscles as well, though his conclusions have not been all of them confirmed by later investigations. One notes the significance of the new order of things in France at this time in the field of medicine as well as in all other subdivisions of science.

Innervation of the Larynx.

Le Gallois in 1812|| inaugurated a series of investigations as to the innervation of the larynx, to which later writers have not since added so large a number of well ascertained facts as we might expect from advances in other fields of physiological research.

* "Traité des Maladies des Enfants," 1828. I have seen only the second edition, 1833.

† "Traité de l'Anatomie Descriptive," 1802.

‡ "Mémoire sur l'Epiglote," 1813.

§ "Précis Elementaire de Physiologie," 1817, Vol. 2, p. 63.

|| Le Gallois: "Experiences sur le Principe de la Vie," 1812.

Dupuytren and Bichat had both observed the effect of cutting the pneumogastric, and many, since Galen's account, had noted the results of section of the recurrent laryngeal nerves, but it remained for Le Gallois to demonstrate that death, which so often supervenes, especially in young dogs, when the pneumogastriacs are cut, was due to section of the recurrent fibres in it, and that this also happened when both recurrences were simultaneously cut. He noted this happened less suddenly, the older the dogs were. He found that the glottic aperture was more narrowed by the operation in young than in old dogs. He also drew attention to the varying effects from ligation of the recurrences, due to the degrees of pressure exerted. Le Gallois did not take so much pains to record the color and sex of the dogs in his experiments, but on the perusal of his work it may easily be seen how much of the work of more recent, more voluminous, and less readable experimenters was anticipated by him.

Sir Charles Bell* in 1821 asserted that because the vagus nerve does not arise by a double root and has no ganglia, it is not a nerve of sensation, he having shown, simultaneously with Majendie, that the posterior roots of the spinal nerves are sensory and the anterior roots are motor filaments. Another theory of Majendie was contradicted by Robert Willis in 1829, and later by Claude Bernard. They showed that it was erroneous to regard the superior laryngeal nerves as supplying filaments to the closers of the glottis, and the inferior laryngeal nerves as sending branches exclusively to the openers of the glottis. Willis, according to Holmes, did much to elucidate the actions of the various intralaryngeal muscles, a matter still involved in much uncertainty†. Marshall Hall in 1836‡, and Dr. John Reid, as well as Majendie, contributed largely to the development of our knowledge of this intricate subject. Hall was apparently the first to point out the reflex nature of Spasmodic Croup. His idea that it is due to the irritation of teething, indigestion and constipation has been much invalidated, but only in very recent years.

Sir Astley Cooper, in drawing attention to his discovery of the ganglion of the superior laryngeal nerve in the vagus, opened the

* "On the Structure and Function of the Nerves."

† Some of the statements ascribed to Willis by Holmes had been long previously made by other observers.

‡ "Lectures on the Nervous System," and especially later in 1841 in his book "Diseases and Derangements of the Nervous System."

way for Cock* and Hilton† to declare the internal branch was exclusively a nerve of sensation, the inferior or recurrent nerve being the exclusively motor nerve of the larynx and the external branch of the superior laryngeal, supplying the crico-thyroid muscle. Dr. John Reid‡ confirmed these conclusions and added many new facts by his investigations upon the glosso-pharyngeal and vagus nerves.

Majendie was of the opinion that section of the superior laryngeal nerve prevented the emission of almost all acute sounds, but Longet§, who prefaces his account with an exhaustive bibliography of the work of previous observers, declared, as had Bischoff before him, that the section of this nerve produces no effect upon the voice in dogs. They also asserted that the Spinal Accessory is the motor root of the pneumogastric nerve, Galen having considered the former a branch of the latter. They cut the Accessory filaments within the skull and obtained aphonia and hoarseness in animals. Notwithstanding this, Claude Bernard||, that materialistic philosopher, who in many ways exercised such a pernicious influence on French thought in the decades which followed him, insisted that the Spinal Accessory is a motor nerve and the Vagus is a mixed one at their origin, and that they do not bear the relation to one another of the anterior and posterior roots of a spinal nerve, but that the Spinal Accessory is a motor nerve which regulates the movements of the larynx and the thorax every time these organs are to produce phonation, and that the Pneumogastric regulates them in respiration. Therefore the Spinal Accessory should be regarded rather as the antagonist than as the co-efficient of the Vagus, as phonation for the moment suspends the act of respiration. He confirmed the observation by Majendie as to the lack of effect on the voice of the section of the superior laryngeal nerve, which lesion induces anæsthesia of the larynx.

Voice Production.

The history of the advance in the knowledge of the innervation, and of the kinetic phenomena of the larynx, is intimately associated with that of voice production. It therefore seems best that some account of it should be given here, though this must be done in the most cursory way. Full accounts of the progress of such knowledge

* Edward Cock: "Gray's Hospital Reports," 1837, p. 311.

† John Hilton: *Ibid.*, p. 514.

‡ "Edinburgh Medical and Surgical Journal," 1838, Vol. 49, p. 109.

§ "Anatomie et Physiologie du Système Nerveux," 1842, T. II, p. 271.

|| "Archives Generales de Medicine," 1844, April, p. 397, May, p. 51.

may be readily found in the separate treatises of Gordon Holmes,* of Fournié† and of others. We must retrace our steps considerably. We have seen the very crude ideas of Democritus, Hippocrates and Aristotle, and we have to regret the lost treatise of Galen on the voice, which perhaps would have revealed to succeeding generations clearer ideas on the subject. We find in all the Præ-Renaissance and Arabian works constant reference to Galen's conception of the larynx—in mediaeval Latin, the "principalissimum organum vocis." The first reference, which I have noted after Galen, to a more extended and exact conception of laryngeal physiology is to be found in the remark of Paré on the anatomy of the larynx. "When the cartilages are open the voice is large like the Basse-Contre. On the contrary, when they are compressed, the voice is shrill." It was long after the time of Paré before the matter was taken up as a separate study. Cæsserius indeed, in his work on the larynx, discusses voice formation to a considerable length, as did many other anatomists incidentally, but it was Claude Perrault (1613-1688) who first explained the voice by mechanical laws and especially endeavored to demonstrate that it is produced only by the larynx without the trachea taking any immediate part in it.‡ He compared the larynx in birds and animals with the human organ.§ "As regards the tone of the voice, it is low and grave when the glottis makes a long slit, because this makes the lips relaxed and their vibrations slower." He insisted that the upper parts of the air passages take part in the formation of the voice. He likened it to a flute, the muscles at the larynx working the variations.

Shortly after this Dodart|| took the matter up. He insisted that the trachea only furnishes the material of the voice, *i. e.*, the expired air. The glottis is the only organ of the voice. All the effects of the glottis for tones depend on the tension of its lips, and of its various internal structures. The concavity of the mouth has no part in the production of the voice, but it is a modifier of it, and still more is this true of the nose. He showed that Galen's comparison to a flute could not be accepted, if one went into details. He spoke of the vibrations of the ligaments, and of the

* Holmes: "Vocal Physiology and Hygiene," 1879.

† Fournié: "Physiologie de la Voix et de la Parole," 1866.

‡ Sprengel: I. c. V. 150.

§ "Oeuvres Diverses de Physique et de Mécanique," Edit. 1721, Vol. 2, p. 392; also *Ibid.*, Vol. I, p. 220, II partie, Du Bruit.

|| "Mémoire sur les causes de la Voix de l'Homme," par M. Dodart, *Mém. de l'Académie des Sciences*, 1700, p. 238.

dilations and contractions of the glottis. He asserted the trachea is elongated in high notes, and shortened in low ones. He likened the vocal organ rather to a horn or trumpet. According to him, the glottis is the place which corresponds to the lips of the musician; the body of the instrument extends from the glottis to the external orifice of the vocal canal, that is to say, to the mouth.

In 1742 Ferrein modified the conception of Dodart somewhat by comparing the larynx to a stringed instrument such as the violin.* He was the first in accordance with this idea to apply the name "vocal cords" to the lips of the glottis. Dodart, as we have seen, had taken note of the oscillations of these ligaments, but Ferrein more particularly saw in them the principal instruments of the modulation of the voice, and he reported a number of observations which tended to prove that the air in striking the glottis produced different tones according to the vibrations which these parts performed. Bertin, in 1745, inclined to the simile of Dodart, asserting that the vibration of the glottis was not sufficiently free to allow comparison with the oscillation of cords. Ferrein's view was adopted by Montagnat (1746), who called attention to the second larynx in birds, which is supplied with a taut membrane which is able to produce the same notes as the ligaments of the glottis. Haller in his great work† wrote a long dissertation upon the voice and the parts played in its formation, by the various structures of the nose and throat, referring to the accessory sinuses as having the function of making the voice more sonorous. He seems, however, to have added very little that was original to our actual knowledge, and the same may be said of Walther‡, but the latter has much to say of the intralaryngeal movements.

We should not pass on to the nineteenth century in this matter without taking note of the noble labors of Johann Conrad Amman.§ Although Hartmann says that the Spanish Benedictine monk, Pedro de Ponce, in the sixteenth century, proved that deaf mutes can be taught to speak, Amman's is the first treatise upon a method of teaching the mute to talk. He followed practically the same method of teaching as is now used in the various institutions for that purpose, *i. e.*, lip reading.

* Vid. Sprengel l. c. and Columbat: "Traité des Maladies et de l'Hygiène des Organes de la Voix," 1838.

† "Elementa Physiologica." Ed. 1741. Tomus III, Lib. 9.

‡ "De Hominis Larynge et Voce." Haller's Disp. Anatom, 1749, Vol. IV, p. 691.

Surdus Loquens sive Dissertatio de Loquela, 1740.

Under the impetus of the new life in France, Majendie took up the study of voice production where it had halted for the best part of a hundred years. He was the first who actually saw by experimentation on animals the vibration of the vocal cords "in vivo." He* again more confidently compared their actions to the vibrating bands of wind instruments, this in animals depending on the contraction of the laryngeal muscles rendering the vocal cords taut, the intensity and volume of the voice depending on the extent of the vibrations, and this depending on the length of the cords, the size of the larynx and the amount of the expulsive force of the air current. In contradistinction to Ferrein, he taught that the tones of the voice depended not so much on the tension of the cords as upon the length of their vibrating surfaces, deep tones being due to the vibration of the whole length of the cord, and the high notes to the vibrations only of the posterior portions, varying with the height of the note. The larynx rises in high notes and descends in the low notes, thus lengthening and shortening the vocal tube. He regarded the ventricles of the larynx as anatomical devices to allow of the separation of the true from the false cords. He differed from Bichat in supposing the epiglottis to have something to do with the formation of the voice. He also noted the modifications of the voice by the cavities of the mouth and nose. Holmes (l. c.) refers to Lisacovius as having dwelt upon the importance of the width of the vocal slit in voice production, a matter appreciated, as we have seen, by Dodart and exaggerated by Paré before him. Sehfeldt, in 1835, was the first to state that the falsetto voice is produced by the action alone of the edges of the vocal cords. Holmes says that Biot in 1816 originated, and Cagniard de la Tour by his invention of the siren† in 1825 demonstrated the accepted theory of sound produced by the vibration of tongued instruments.

Mayer‡ and the great Johann Müller§ wrote at great length on the subject, but in a manner most discouraging to the modern reader. In this respect, however, they were surpassed by Harless.|| He wrote a two hundred page article on the voice, in which the most exhaustive examination of the anatomy of the parts was made. His-

* Majendie: "Précis Elementaire de Physiologie," T. I, p. 210.

† The siren consists of a revolving plate pierced by holes at its circumference, through which on passing in its revolutions over an aperture air is forced, the rapidity of the revolutions regulating the pitch of the musical note produced.

‡ Mayer: "Archiv für Anatomie und Physiologie," 1826, p. 188.

§ Müller: "Handbuch der Physiologie des Menschen," 1840-2, p. 179.

|| Emil Harless: "Wagner's Handwörterbuch der Physiologie," 1853, IV, p. 505.

tological, chemical, dynamic investigations are detailed with unwearied industry and indefatigable zeal. Its very ponderosity has buried it in oblivion. It is highly probable that a careful study of it might reveal matters of interest to the modern student, brave enough to undertake the task.

This brings us up to Garcia's invention which revolutionized the study of voice production. Many works rapidly appeared, among which may be mentioned Merkel's "Funktionen des Menschlichen Schlund und Kehlkopfes" (1862). He had previously, before the importance of the advent of the laryngoscope was appreciated, written his "Anthropophonik." In 1861 Bataille in a memoir* presented to the Academy of Sciences, following up the suggestion of Garcia, advanced very decidedly the knowledge of the finer intralaryngeal movements in phonation and in singing, though his results were stated somewhat dogmatically. Notwithstanding the invention of the laryngoscope and the numerous exhaustive monographs on the subject of voice formation, among which may be noted Grüntzner's†, little was established beyond what had been discussed in prae-laryngoscopic days. The photography of the larynx by French‡, a triumph of ingenuity, skill and persistence, resulted in upsetting many of the ideas, conceived not only by the early investigators, but much also which had been advanced since the introduction of the laryngoscope. Willis in 1830 advanced the idea that the vibration of the air in the cavity of the mouth was independent of the vibration of the laryngeal air, and thus the formation of the voice was a complex process. This idea was superseded by the somewhat similar but modified over-tone theory advanced by Helmholtz§, who derived the idea from Wheatstone.¶ This has since been the prevailing theory of voice production, which, with modern apparatus of precision, is being so scientifically investigated by Professor Edward Scripture.

Photography.

Modern
Theories.

* Nouvelles Recherches sur la Phonation, 1861. Ref.: "Gaz. Hebdomadaire de Med. et Chirurgie," 17 Mai 1861.

† "Hermann's Handbuch der Physiologie," 1st B-d, 2te Theil, 1879.

‡ Trans. Am. Lar. Ass'n, 1882

§ Lehre von den Tonempfindungen," 1862.

¶ "London and Westminster Review," 1837.

A NEW PHASE OF SERUM THERAPY. A NEW SERUM FOR USE IN MIXED INFECTIONS.*

BY E. VON QUAST, M. D., KANSAS CITY, MO.

At the time when I read my first paper before the Jackson County Medical Society, in 1895, I made a statement that if we could only get an antitoxin which would combine the anti-streptococcic and anti-diphtheritic serums we would have the remedy, *sine qua non*, in mixed infections. Close observation and repeated cultures for a number of years convinced me that most of our cases of diphtheria were due to mixed infections, especially by the streptococcic germ; and while we succeeded in conquering the infection of the Loeffler germ by the intelligent use and early administration of full doses of diphtheria antitoxin, we did not combat the septic infection caused by the streptococcic germ; hence some form of sepsis or suppuration appeared, after all. No doubt all membranous deposits in the pharynx and larynx are not purely diphtheritic, and sometimes we find a prevalence of streptococci.** The angina of scarlet fever with its membranous deposits is always the result of a mixed infection, but frequently the bacilli of diphtheria are present, though not always. The unsatisfactory action of Behring's antitoxin in these cases made me investigate, and I found that the swollen glands in the neck, the ear trouble, the nasal trouble, etc., were septic in character, produced by pyogenic germs, streptococci in abundance, and anti-streptococcic serum alone did not produce the desired effect.

Correspondence followed with the reliable house of Parke, Davis & Co., of Detroit, Mich., and after repeated requests to make experiments, a horse was immunized first against tetanus, then streptococcus and diphtheria infection. They succeeded admirably, and furnished me with the first batch of serum early last March. For some time I had no chance to use it, and during the period of severe scarlatina infection, I was compelled to resort to the anti-diphtheritic serum alone. The results with the above cases were not what I should desire to see. Since then I have

*Read before the Jackson Co., Missouri, Medical Society.

**Vide Pruden's Reports.

had a number of cases, eight in all, three of which were of very violent and malignant types of scarlatina, in which I used the special serum with the most gratifying results, in fact, it has surpassed my highest expectations. The action was very prompt and efficient. In none of these cases was any ear trouble experienced; even at the beginning of the appearance of the exudate it is checked rapidly. The swollen glands disappear, and no supuration has been seen in even the worst cases; neither nephritis nor other complications have developed. The desquamation was diminished in the majority of cases where the angina or throat exudate appeared in the first days of the illness. In none of these cases did laryngeal symptoms develop or follow; in only two appeared urticaria, which was formerly met with so often after the administration of anti-diphtheritic serum. Two of the scarlatina cases were children, four years of age, and one a married lady; of the other mixed infection cases, three were children and two adults. (The diagnoses in all these were verified by cultures.)

The following case, which came under the observation of J. M. Frankenberger, M. D., of this city, was the youngest child of a family living in an unsanitary dwelling, and is of particular interest. The child, who was two years old, was taken ill Saturday evening, March 16; the temperature was 100° , and the patient complained of headache and sore throat; and there was a rapid pulse. Sunday, March 17 he felt worse, and the temperature was 102° ; no membrane was discovered in the nose or throat. On Monday, March 18, the condition was much worse; the throat was swollen, the temperature rose to 104° , with a great deal of coryza, but no membrane was visible. Cultures showed streptococci and staphylococci with no bacilli of the Klebs-Loeffler type. On Tuesday, March 19, the temperature reached 105° , the glands of the neck were swollen, the membrane was visible on the upper and back part of the pharyngeal wall; cultures showed the presence of streptococci, staphylococci and bacilli of diphtheria. An injection of the mixed anti-toxins was made on Wednesday evening, March 20, by myself; in six hours the temperature had fallen from 105° to 103° , and the patient complained of hunger for the first time in five days. Inside of twenty-four hours, the glands of the neck were considerably reduced in size, the growth of membrane was checked. The patient was discharged on the following Sunday, and, though very weak, no visible signs of disease could be found. No internal remedies except stimulants had been administered. The recovery took place uninterruptedly. No signs of paralysis were observed in any of these cases.

I trust my fellow practitioners may decide to test this product thoroughly, and also that they may have the same excellent results which I have experienced. I would be very glad to see reports from any others who have tested this method of treatment.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Stated meeting, February 26, 1902.

Emil Mayer, M. D., Chairman.

Surgical Treatment of Congenital Defects of the Palate.

Dr. Truman W. Brophy, of Chicago, delivered an address on this subject, illustrating by lantern slides his method of operating. He said that what he had done in this field was the result of a stimulus received while a student in New York City at the clinic of the late Dr. Lewis A. Sayre. In one of these lectures, Dr. Sayre said if there were only a way by which the two sides of the cleft palate could be sprung together, and maintained in that position, the deformity could be relieved. At that time the method of doing this was unknown, and the speaker said he had thought over this statement of Dr. Sayre for ten years. He had then carried wire sutures through the maxillary bones, placed lead plates on the outer portions of those bones, forced the two sides together, and succeeded in getting union. This had led him to work quietly in this field for seven or eight years before publishing his method. At the Congress in Chicago, in 1893, he had read a paper on this subject, which had attracted considerable attention. Up to the present time he had done 650 operations on patients having cleft palate, both infants and adults. Of the young children, about 250 had been operated upon by transfixing of the bones, and the results would be shown by means of the lantern slides. Dr. Brophy then presented a series of lantern slides illustrating his method. The main points touched upon by the speaker in connection with the description of these pictures, were: (1) The original plan of forcing together the maxillary bones by means of several strong silver wire sutures, reinforced by lead plates, and passed in such a way as not to occlude the passage through the nasal chambers; (2) the use of tension sutures inserted into the soft palate at a considerable distance from the line of coaptation sutures, and pass-

ing on either side through slots in a strip of lead, thus giving not only a secure hold, but practically putting the soft palate in splints during the process of healing; (3) the fact that in these cases of cleft palate the upper jaw is wider than the lower jaw, and the upward thrust of the latter tend to widen the cleft in the palate.

Dr. Robert Abbe said that he had had a moderately large experience in this trying field of surgery, and had been surprised at the lucidity of the descriptions of this difficult subject that had just been presented by Dr. Brophy. The methods of dealing with both the hard and soft palate did not seem to him very different from those employed in surgery during the past quarter of a century. The reason the operation had been discarded by some surgeons was apparently not because it had failed to produce union of the line of sutures, but because it had been found that the voice was not much better than before operation. Failure to get union in the line of sutures was overcome by Langenbeck's method of dividing the curtain of the palate. Since the adoption of this method he did not recall a case in which he had failed to secure union. It should be remembered that a single line of sutures close to the border would often cut through unless reinforced by another line at a greater distance from the border. This was well accomplished by the lead plates used by Dr. Brophy. The speaker said that ten years ago he had had a rubber plate made to fill the roof of the mouth before the operation, and had replaced it and left it there during the ten days of repair. After having tried it in several cases he found that it did not improve his results. It could not be denied that the newly-made palate is abnormally tense. The device of Dr. Brophy for bringing together the maxillary processes was most admirable, and he would try it at the first opportunity. It certainly gave greater freedom to the soft palate at the back. As to the desirability of operating in the earliest months of life, he would say this was eminently the proper thing to do for the purpose of bringing the jaws together. Hitherto he had not repaired the hard or the soft palate under two years of age, and had always preceded it by an early operation on the lip, but he must admit that this certainly diminished the field of operation. He had been able to do the work just as well with the Hagedorn needle as with any of the special needles for this class of work. The defective hearing observed after this op-

eration he did not think was due to the division of the tensor palati. Where the palate was defective Nature tried to close the posterior defect by bringing the palatopharyngeus together more than ordinarily, but in addition to that it would be found that adenoids were uniformly built up between, and they probably had a great deal to do with the blocking up of the Eustachian tube. When the curtain of the palate was very hard, the suggestion of making nicks on the side was a good one, and would help some.

Dr. Arpad G. Gerster said that the deafness observed in so many of the patients suffering from cleft palate was certainly not dependent upon the division of the tensor palati muscle, for, defective hearing was observed very often in persons coming for operation for this deformity, if they had reached a certain age. The defective hearing could probably be explained by the fact that the usual aeration of the nasal cavities was not effected and foreign bodies were introduced into the nasal passages almost constantly—in other words, a chronic naso-pharyngeal catarrh appeared to be the cause of the defective hearing. A very large proportion of these patients also showed not only a defect in the closing of the palate, but an atrophy and a functional defect. This involved all of the palatal muscles and the pharyngeal muscles. This often explained why the functional result was very bad, although the technical result of the operation was excellent. For this reason, Kingsley's plate often had to be resorted to in order to give proper function. These patients often show shyness, unwillingness of speech, and other peculiarities. There were, of course, some people who were intelligent and anxious to do their best, and with these massage and proper exercises can and will do a great deal of good. When the mucoperiosteal flap was separated the arc was converted into a straight line, and the space thus left filled in with blood clot, but it would be found twenty-four hours after the operation that, as a result of the atmospheric pressure, the liquid portion of the clot was squeezed out and the arc in this way gradually become re-established. The objections made to Dr. Brophy's operation by Dr. Stone, of Boston, did not seem to him at all valid. It should always be remembered that the nasal and oral cavities require to be separated, and if nothing else than this were accomplished it would be a great deal, and far superior to any plate for closing the opening. Dr. Brophy's idea of ap-

proximating the alveolar processes of the hard palate was an excellent plan, and certainly removed one of the most formidable features of the operation, the danger of severe hemorrhage. The peeling up of the mucoperiosteal flaps according to the Langenbeck method, was a very bloody procedure. He believed the operation was never so useful as when done on the newly-born infant. The reason for this was the well known fact that a large number of such children die from neglect and starvation. He had found the ordinary Peaslee needle in the fixed handle a most useful instrument for introducing the sutures. If the ordinary Peaslee needle were used with the cutting point curved on the flat the needle punctures, after tying the sutures, became small rhomboidal openings, which admitted infection. On this account, he had had the Peaslee needle made with the cutting edge in the other direction, so that the needle punctures became slits on tying the sutures.

Dr. James F. Mc. Kernon said he could only express his admiration for the method of operating described by Dr. Brophy. The speaker said that several years ago he had begun operating upon cleft palate on adults as well as children. He had operated by the older method described by the previous speakers, but his results had been uniformly bad. About six years ago, at the suggestion of a surgeon, he had adopted a somewhat different method with better results. This method involved the performance of a preliminary tracheotomy under cocaine the day previous to the operation. This allowed more rapid operating, prevented the discharges from going into the stomach or larynx, and allowed of treating the wound somewhat after the manner of a wound on the external surface of the body. His plan was to pack the mouth perfectly full with gauze, nourishing the patient by the rectum. The first dressing was removed at the end of twelve hours, as there was rarely any vomiting when the chloroform was administered through a tracheotomy tube. The dressings were reapplied after simply cleansing the wound. He had adopted this method in the cases of sixteen adults, and four children during the past six years, and, with the exception of two adults in whom sloughing took place, and in a child in whom the operation completely failed, the results were uniformly good. The youngest child operated upon in this way was one year old, and the oldest adult, thir-

ty-two years of age. Nearly all of the adult cases had presented defects of hearing on one side or the other before operation. They had all been tested functionally before operation, and in all of them, after six or eight months after the operation, the hearing had improved. He did not now cut internal to the hamular process, but used the Langenbeck method, cutting close to the alveolar border and leaving the substance of the muscular tissue as complete as possible. He found that if the adult patients were taught the proper method of articulation, the result would be good. Many of the early cases operated upon had not received this most important after-treatment. He was an advocate of an early operation, though he would hardly like to do the preliminary tracheotomy in a child under one year of age. He believed the palate should be closed first and the lip subsequently. He had found in his case that the soft palate would retract and form an arch, even though three or four weeks after the operation, the appearance was such as to lead one to believe that a perfectly normal palate would result. When the palate became retracted he employed massage, but he had not noted any good result from it. In nearly every one of his adult cases there had been a remarkable shyness, and in some a melancholy spirit, and if for no other reason than to relieve this, he believed the operation should be done, because if instructed how to talk, they would be able to mingle without discomfort with their fellow beings. He made use of a needle in a fixed handle, similar to the Hagedorn needle.

Dr. H. Lilienthal believed that these unfortunate children became sensitive to ridicule at an early age, and hence they should be operated upon very early, and from the first be taught correct articulation, instead of doing a late operation and undoing former teaching. Dr. Brophy had certainly convinced him that the upper jaw was wider than it should be in these cases, and that by forcing the parts together we corrected Nature's error. This was infinitely more rational than simply doing a plastic operation for the purpose of filling in a gap that should not be there. He had thought until this evening that he had been making use of an original method by adapting Tait's flap-splitting method to the operation on the palate, but he had learned that Dr. Brophy had antedated him in this. He did not think preliminary tracheotomy was ever called for in this class of cases. He believed Dr. Mc.

Kernon would succeed just as well without this unnecessarily dangerous preliminary procedure.

Dr. J. S. Stone, of Boston, being asked to take part in the discussion, said that he was very glad indeed to hear Dr. Brophy's paper. Some of the pictures shown had apparently been taken far forward, and the lower jaw appeared to be narrower than the upper jaw because the lower jaw was sectioned nearer the front than the upper. In all the cleft palates that he had seen the cleft had almost invariably grown narrower; he had never known of the cleft growing wider.

Dr. Brophy closed the discussion. He said that he did not know that anywhere in the literature of the subject Langenbeck had suggested the application of lead plates, which not only serve as splints during the process of union, but also serve to prevent the cutting out of the sutures. As to the question of seemingly defective mentality in these patients, he would say that he thought this was largely due to the embarrassment and mortification which they had experienced from the taunts and ridicule of unthinking playmates. Of course, it was well known that these children often presented other defects. For example, he remembered a child of three years, who had been brought to him with double hare lip, cleft palate, widely open fontanelles, curvature of the spine, and with six fingers and two thumbs on each hand. He had been delighted to find the speakers this evening so generally in favor of early operation, because by such practice many of the difficulties attendant upon articulation would vanish. He wished to say here that many of these children, if operated upon early, would speak correctly when old enough to learn to speak. Some people having decidedly defective palates, learned to speak fairly well, while persons with good palates often, as a result of bad habits, spoke poorly and incorrectly. He had never yet felt in any case that it was essential to do tracheotomy. He would say to Dr. Stone that the palate grows wider, even in utero, and that it does so because by muscular action the lower jaw presses upward against the inclined plane presented by the upper jaw, thus forcing the two halves of the upper jaw more widely apart. These operations should be done in early infancy: (1) Because the parts are soft and can be more easily approximated than later; (2) because the child does not receive the same shock that it does later in life; (3) because the parts are put in the proper position and the child is better nourished in consequence, and (4) because the child is thus enabled to speak correctly on arriving at the age at which it can speak at all.

LARYNGOLOGICAL SOCIETY OF LONDON.

Annual Meeting, Friday, January 10, 1902.

E. CRESSWELL BABER, M. B., President, in the Chair.

The following officers were appointed for the year: President, E. Cresswell Baber, M. B.; vice-presidents, E. Clifford Beale, M. B., F.R.C.P., and F. W. Bennett, M. D., and Dundas Grant, M. D.; treasurer, William Stewart, F.R.C.S., Edin.; librarian, St. Clair Thomson, M.D., F.R.C.S.; council, F. de Havilland Hall, M.D., F.R.C.P.; Sir Felix Semon, M.D., F.R.C.P.; H. Lambert Lack, M.D., F.R.C.S.; Richard Lake, F.R.C.S.; Ernest Waggett, M.B., and J. Barclay Baron, M.B.; secretaries, Charles A. Parker, F.R.C.S. Edin., and James Donelan, M.B.

Specimen of a Pedunculated Angeioma of the Larynx.

Shown by Dr. Browner. The patient, a strong, healthy man aet. 63, was seen in June, 1901. For the last twenty years the voice had been slightly hoarse, and he could not speak for any length of time with comfort. Five months ago the voice suddenly became very hoarse, and had remained so ever since. There was no dysphagia or dyspnea. A large red raspberry-shaped growth was seen in the glottis, about the size of a marble; only a small part of the vocal cords was visible. A piece of the growth was removed for examination. The Clinical Research Association reported: "This seems to be a nevoid growth in the mucous membrane, which is ulcerated in the centre and become consolidated with fibrin and exudation. The vascular channels in the deeper tissues are large and numerous."

The growth was removed by Frankel's forceps. There was now a small red swelling in the anterior part of the left vocal cord, but otherwise the larynx seemed to be normal. The voice was better than it had been for twenty years, and up to the present there had been no recurrence.

Mr. P. de Santi said that from the general appearance of the growth under the microscope there was, in his opinion, no doubt that it was a tumor of the nature of nevoid tissue, and that the

case was one of "pedunculated angioma." He understood that Dr. Bronner wanted to know if the Society agreed with his diagnosis.

Case of a Female Whose Saddle Nose had been Treated by Subcutaneous Injection of Vaseline (Paraffin) with Casts and Photographs Taken Before and After Treatment.

Shown by Dr. Scanes Spicer. The patient, aet. 25, had applied for treatment for nasal suppuration and fetor, which had lasted from childhood. There was a negative history as to traumatism or acquired syphilis, but some doubt as to evidences of congenital taint. She had a well-marked and tip-tilted saddle nose and stunting of the nasal framework. Crescentic wrinkles from eye to eye over the bridge of the nose were well marked, as seen in Cast No. 1, taken the day before injection (May 6, 1901). In addition to ordinary methods of treatment for nasal suppuration, the speaker suggested improving the shape of her nose by injecting sterilized vaselin as first described by Gersuny of Vienna. He had obtained the result indicated by Cast No. 2 and Photo. No. 2 (taken end of July, 1901).

The paraffin used was a mixture of hard and soft paraffin made to melt at 40° C. (105° F.), previously sterilized and kept in sealed bottles. The skin of the nose, etc., was cleansed first with alcohol and then with Liq. Hydrarg. Perchlor. The syringe and needle were cleansed and boiled in the sterilizer, which was also used as a water bath to heat the paraffin. A German glass hypodermic syringe was used, like that for injecting tuberculin. Ten to twelve syringefuls were injected, some downwards over nasal bends, some upwards from the sides of the nose into the depressed gap, and the injected matter was moulded by an assistant's fingers so as to shape the part before setting. The skin was again cleaned and the points of injection sealed up with collodion. The syringe was removed for refilling from the socket in the needle, which, when once in situ, was allowed to remain there until it was judged that enough vaselin had been injected at that spot. There was no pain, though the nose looked a little tense and brawny. No paraffin passed into the eyelids apparently at the time. There was afterwards no pain nor inflammation, but in a few days the upper eyelids became somewhat edematous. This had varied in amount from day to day ever since, and in left upper eyelid was a little nodule the size of a

large shot. This had been cut down on, but it did not appear possible to get it out.

The result, as far as the appearance of the nose went, was very palpable, the skin over the bony bridge of the nose being bolstered up, produced a very decent-sized organ. As it was done eight months ago, it might be regarded, as far as could be seen at present, as permanent. It was certainly a great improvement to her appearance, and the patient states that her mother was "proud of her in her altered condition." The patient indeed alleged that there had been an improvement in her general health and nasal suppuration since, but that was doubtless due to the general tonics and nasal washes she had used. The passage of a nodule of paraffin into the upper eyelid was disappointing, and so was the edema of the lids. The former was not improbably due to the physiological action of the pyramidalis nasi, which would tend to shift movable bodies upwards and into the orbit. The latter might be due to a blockage of lymphatic vessels by the paraffin, some of which had probably got divided up into a molecular condition. It should be remarked, however, that the upper lids were inclined to be puffy before injection. There was no edema elsewhere in the body. In any future case Dr. Spicer thought still more care should be taken to put pressure on the root of the nose at time of injection, and he suggested that repeated injections of smaller quantities would in all probability be better than doing all at once. The method appeared to offer many advantages over plastic operations for this class of case. Gersuny injected cocaine before injecting the vaselin, but this, he thought, could be hardly necessary in nasal cases, as the only pain was the prick of the needle. In some of his cases of filling up cavities or formation of an artificial protuberance the effect produced by the vaselin had remained unaltered in shape or size for many months, the paraffin apparently having become encapsuled.

The President thought it a very interesting case, and would like to hear if anyone else had experience of the method. The paraffin injection seemed worth trying in such cases, provided precautions were taken to prevent the paraffin from running into neighboring parts.

M. P. de Santi suggested that in treating these cases a piece of lead sheeting should be applied over the parts adjacent to the root

of the nose, and firm pressure exerted on it during the injection of the paraffin. This method he had used successfully for removal of cirroid aneurysm of the scalp. Such a piece of lead, properly cut and shaped, and applied round the neighborhood of the root of the nose would, in his opinion, prevent the particular accident that had taken place in Dr. Scanes Spicer's case. If this were done he would also be in favor of not removing the lead for some little time after the operation. As he understood from Dr. Spicer that the infiltration into the eyelids had not taken place immediately after the injection of the paraffin, but some time afterwards, it would also be easy to keep up the pressure on the parts by means of the lead sheeting and bandaging. He congratulated Dr. Scanes Spicer on the fine nose he had made in this case.

Dr. Bronner inquired if the paraffin had always been as soft as it was at present. He thought that by pointing the syringe downwards one would get over the particular difficulty that had arisen in this case. In a case of his own, which was similar to this, the nose was very much harder than that of the patient they had just seen, and his own difficulty was that immediately the paraffin was injected it assumed a certain shape, and retained that shape to such an extent that one could not mould it. Two or three weeks after the operation, in his own case, some inflammation set in. There was no pus, but the nose became red; in a few days, however, it settled down again to its normal state.

Dr. Milligan asked what kind of paraffin had been used by Dr. Scanes Spicer, and what the temperature at which it had been injected. It evidently was a very mobile paraffin.

Dr. Lambert Lack thought it might be possible to raise the skin and make a small cavity into which to inject the paraffin, instead of injecting it at random into the subcutaneous tissues. He thought the result in Dr. Spicer's case was excellent.

Dr. Donelan said that with regard to preventing the rapid cooling of the paraffin, it might be possible to model a series of noses varying from the most aristocratic and refined to the most vulgar in type, and have them made on the principle of the Leiter's coil, with a double chamber, so that the temperature might be maintained at that of the injection, and the nose given any desired shape.

In reply, Dr. Scanes Spicer said that he put the bottle containing

the paraffin and the syringe into a water bath and heated it till it was just mobile. Such a small quantity as was injected must very soon cool down to the body temperature. The paraffin described by Gersuny was described in the Austrian Pharmacopeia as unguentum paraffinum. It is said to melt at 40° C., i. e. 105° F. Rogers, of Oxford street, had prepared it for him (and from this firm it could always be obtained) in hermetically sealed bottles. He was very careful to ensure asepsis. There was not the slightest reaction of any kind after injection in his case. The nose was possibly a little tighter at first than it was now. About six drachms were required to form the "bolster."

With regard to Dr. Lack's remarks, he wished to say the paraffin was not injected "at random." The point of the syringe was put down where the chief part of the bolster was required, and then the paraffin was injected little by little and slowly, and the lump rose before one's eyes. But he thought that speaker's idea of first making an incision and then a kind of cavity with a blunt probe beneath the skin a very good one, and if he had another case he would cautiously try it. He feared, however, that bleeding might interfere with the operation. He tried to direct the shape of the bolster into that of a kind of omelette underneath the skin, between the skin of the nose and the bone. He had an assistant to help him while doing the operation, but the patient did not mind a bit, and did not even sit down for it.

Sequel to Case of Radical Cure of Multiple Suppurative Sinusitis and Polypoid Disease of the Nose. Previously exhibited April 10, 1895, and January 8, 1896.

Shown by Dr. Scanes Spicer. The patient, a male aet. 21, was first seen on November 4, 1893, suffering from bilateral nasal obstruction due to polypi, accompanied by profuse suppuration. These conditions he had had for several years, for which repeated forceps operations had been performed. Lately he had lost 1½ stones in weight. Empyema of right antrum was indicated by symptoms, and corroborated by transillumination and by exploration through the canine fossa and irrigation. A day or two later the pus had collected near site of puncture and formed an abscess, which had burst into the mouth. The polypi were thoroughly removed, and also the anterior end of the right middle turbinated body and the polypoid masses about the ostium maxillare were

thoroughly curetted. The discharge continued profuse. Radical operation, as described by the speaker, was recommended and performed in St. Mary's Hospital on December 2, 1903. A two-ounce bottleful of polypi, granulations, and cholesteatomatous debris were removed. There was severe febrile reaction afterwards, which soon subsided, and patient left hospital in ten days, and gained in first week at home 7 pounds in weight. The polypi recurred and the nasal suppuration continued, though clearly not from the antrum, as when the patient blew through the antrum from nose to mouth or vice versa no pus was seen. Removal of polypi and bone and curettement of the ethmoidal lateral mass under cocaine were persisted in on and off until March, 1895, when the bone about the right frontal eminence appeared swollen, and the skin over it tinged with an erysipelatous blush the size of a shilling, together with considerable pain and malaise. He had been losing weight again, and there was evening pyrexia. Retention of pus was diagnosed in the right frontal sinus, and the left was possibly involved also, though in a less degree. There were both polypi and pus in the left nostril, which had been treated throughout the case; the antrum on this side was translucent. Operation was recommended, and the frontal sinuses were opened on March 23, 1895. The patient had a very deep natural median furrow on the brow, so this was used for a mid-line incision. A half-inch trephine was used and applied centrally, its progress being carefully tested with clean quills. As soon as the sinuses had been entered on either side the crown was levered up from its attachment to the septum between the sinuses and detached. At once a membranous sac containing gelatinous polypi and yellow pus sprang from each sinus into the wound. Both sinuses were now thoroughly curetted out, passages made freely into the nose with sharp spoons, the cavities swabbed out with chloride of zinc, and a rubber drainage-tube passed through each sinus out through the corresponding nostril, their ends tied loosely together, and the skin incision sewn up. Warm boracic irrigations were used both through the tubes and in the nose, and the tubes were slightly moved each day, and were finally removed about the tenth day. The patient was shown to the Society on April 10, and in the "Proceedings," Vol. II, page 74, is simply mentioned by name, as a case of antral empyema. The patient had gained eleven

pounds in weight since the operation seven days previously, and there was hardly any discharge, while the skin wound had closed.

The patient was shown again at the annual meeting on January 8, 1896, as an instance of a radical cure. There had been a gradual diminution of suppuration until it completely stopped, and no recurrence of it or the polypi had recurred for several months. The line of incision was almost invisible owing to the deep natural furrow.

During 1896 the patient entered the Army Medical Service and went to India on active work. He continued in the fullest enjoyment of health and energy till he injured his leg during prolonged riding on duty and developed phlebitis and thrombosis of the left saphena. On returning home in 1901 he was in St. Mary's Hospital. He then had not had any recurrence of polypus or nasal suppuration for over $5\frac{1}{2}$ years. Unfortunately, however, the phlebitis in the leg persisted with relapses until, on October 3, he was considered to have recovered and to be fit to return to duty. He returned to London from the country with that view, when he was seized with cerebral thrombosis, from which he died in three days.

Dr. Spicer considered the interesting points about the case were its long duration, extensive diffusion, and obstinacy of the intra-nasal disease. Before coming under his charge irrigations only had been used, and removal of the larger polypi with forceps. He underwent constantly repeated operations at his hands for over $1\frac{1}{2}$ years before the intra-nasal disease was finally eradicated, but in the end he was cured, and remained so for $5\frac{1}{2}$ years, dying of a quite independent affection. Further, there was a remarkable gain in weight after each of the larger operations. Lastly, this was one of the first cases of cured frontal sinus empyema to be demonstrated at the Laryngological Society of London, and although the notes had not yet appeared in the "Proceedings," he thought they were of sufficient interest now the case is finally concluded.

A Case of Bony Thickening Over and Polypi Within The Right Frontal Sinus in a Man aged 40; Operation; Recurrence of Bony Growth and Commencing Similar Symptoms on the Right Side of the Face.

Shown by Dr. Scanes Spicer. The patient was first seen on November 23, 1901. A month previously a swelling had appeared

over right frontal eminence with pain; the upper eyelid was edematous and the palpebral fissure almost closed. There was a long history of nasal catarrh. Trans-illumination of the sinuses showed the most marked relative blackness over the affected eyebrow, with unusual translucency elsewhere. Dr. Spicer diagnosed intrasinus disease with retention of fluid and distension of the anterior wall, and recommended exploration of the sinus. This was done, and it was found that the bone was unusually dense and thick, and a large amount of the diffuse osteoma was chiselled and gouged away. On reaching the sinus it was found to be filled with polypoid tissue; there was no communication with the opposite side. The sinus was gently curetted and washed out into the nose without difficulty and then packed with ribbon gauze, the end being brought out through the forehead wound and the latter sewn up. The gauze was removed on the fifth day, and the patient made an uninterrupted recovery and was about within the week. Later he returned with a new rounded bony swelling on the frontal bone on the same side, which was slightly tender, and on the left side the eyelid was edematous, and the palpebral fissure almost closed, and there was some ill-defined thickening of the left supra-orbital ridge. He said he had knocked himself there accidentally a few weeks before. He was ordered iodide of potassium gr. v, t.d.s., and directed to show himself in the beginning of the year.

It appeared to Dr. Spicer to be an unusual case. There was no history of rheumatism, gout, or any constitutional disease which might throw any light on the case. At the present date he has been taking the iodide for two months, the bony swellings had diminished, and the eyelids and palpebral fissures were both quite normal as well as the intra-nasal condition. The rapid diminution of symptoms under Pot. Iod. suggests "nodes" of a specific nature which, however, the extreme hardness of the bony tumor that was cut into would appear to negative, but opinions were invited as to the diagnosis of the case.

Specimen of Pharyngeal Lipoma.

Shown by Dr. Milligan. Mrs. H——, aet. 37, had suffered from her throat for from one to two years. She complained of slight dysphagia, a feeling of fullness in the throat and considerable amount of dyspnea when lying down. Her general health had also depreciated and she had lost a certain amount of weight. On

examination a large unilateral ovoid swelling was found under the mucous membrane of the posterior wall of the pharynx on the left side. The swelling extended upwards behind the level of the soft palate and downwards behind the larynx, where, indeed, the swelling was most prominent. To palpation the swelling appeared soft and doughy. There was no pain, no expectoration, and no temperature. Diagnosis lay between the possibility of a chronic abscess or lipomatous tumor. The fact that there was no indication of any bone disease present rather negated the idea of abscess. The patient was put under chloroform with the intention of removing the growth through the mouth, but it was deemed advisable, owing to its size and to the dyspnea from which she was suffering, during the chloroform anesthesia, to make a lateral incision and remove the growth from the outside. This was accordingly done and the growth was successfully removed. The patient made an uninterrupted recovery, and was rapidly regaining her health and her strength.

The President thought it a very interesting specimen.

Dr. Jobson Horne thought it would considerably add to the value of the communication if Dr. Milligan would allow the Society to have a section of the specimen. As the specimen was in a bottle it was difficult to express an opinion as to its nature.

Microscopic Section of Fibro-Sarcoma of Right Vocal Cord.

Shown by Dr. Milligan. H. C —, male, aet. 61, had suffered from his throat for six months. He complained of slight pain upon the right side, accompanied by progressive loss of voice. There was no expectoration, no loss of weight, and no history of any previous illness of any moment. When first seen there was slight congestion of the right vocal cord, but no appearance of any growth. When seen six months later the right vocal cord was found to be deeply congested, almost immobile, and growing from its upper surface, at about the junction of the middle with its posterior thirds, there was a smooth rounded reddish-looking growth about the size of an ordinary red marble. There were no enlarged glands. The rapidity of the growth, the almost complete fixation of the vocal cord, and the age of the patient made it probable that the growth was malignant. Its contour and its want of ulceration suggested a sarcomatous process. Immediate operation was advised. In the first place a tracheotomy was performed, and three

days later the larynx was split and the growth fully exposed. It was removed entirely along with a considerable amount of contiguous mucous membrane. An uninterrupted recovery ensued, and at the present time, now nearly twelve months since the operation, the patient was in excellent health and with no appearance of recurrence.

Microscopically the growth had the structure and characteristics of a fibro-sarcoma.

The following is the report from the Clinical Research Association:—"On the free surface the specimen submitted shows considerable activity, and has the structure of a sarcoma, composed in the main of spindle cells, but also showing round and branched cells. The central part of the tumor is composed of fairly well developed fibrous tissue. From the appearances presented I think the tumor should be regarded as a fibro-sarcoma. The epithelium covering the tumor shows active proliferation, and at the spot there is irregular down-growth. At this point it is a question whether some of the large cells seen are not to be regarded as epithelial." Mr. C. H. Wells adds to this report: "I think, on the whole, that they should be regarded as derived from the connective tissues and not from the epithelium overlying them."

Dr. Lambert Lack suggested that both the above specimens should be referred to the Morbid Growths Committee. He thought there was considerable doubt as to the diagnosis in both cases.

Dr. Milligan had not the least objection to the specimens being referred to the Morbid Growths Committee. With regard to the second, the piece shown was all he had, as the Clinical Research Association had not sent him back the remainder.

On the President putting the question to the Society, it was unanimously agreed to refer the two specimens—No. 5, specimen of lipoma of the pharynx, and No. 6, specimen of fibro-sarcoma of vocal cord—shown by Dr. Milligan to the Morbid Growths Committee for report and examination.

X-Ray Photograph Showing Plate of Teeth Impacted in Upper Laryngeal Orifice.

Shown by Dr. Milligan. M. C——, female, aet. 32, swallowed her teeth during sleep, the place of impaction being doubtful. The X-ray photograph now exhibited was taken, from which it would

be seen that the plate was lodged in the upper laryngeal orifice. By the help of a laryngoscope the plate was extracted, and the patient made a good recovery.

Dr. Milligan also showed an X-ray photograph of a rubber tube which had slipped into the maxillary antrum in a case which had been operated upon for chronic maxillary antrum suppuration, and one of an ordinary Eustachian catheter passed into the frontal sinus of a patient suffering from chronic suppurative frontal sinusitis.

Specimens of Papillomata of the Tonsil and of the Posterior Pillar

Shown by Dr. H. Sharman. The patient from whom these specimens were taken was a boy aet. 15, shown to the Society nearly four years ago, May 11, 1898, (see page 86, of vol. v, of "Proceedings").

He had a sessile papilloma of the left tonsil and a pedunculated papilloma of the left posterior pillar of the fauces.

After the patient had been shown the tonsils were removed and the pedunculated papilloma also.

A section of the left tonsil through the papilloma was cut by Dr. Hewlett, and also a section through the papilloma of the posterior pillar. Both were true papillomata, with finger-like processes covered with stratified epithelium.

The interest of the specimens was that they showed that the papilloma of the tonsil grew from the surface of the tonsil proper (not from the interior of a lacuna), and that it apparently lay quite behind and unconnected with the expansion from the anterior pillar known as the "plica triangularis."

The slides have been presented to the Society.

A Self-Looping Nasal Polypus Snare.

Shown by Mr. Atwood Thorne. This snare was made by Messrs. Meyer and Meltzer, and consists of a Y-shaped end-piece fitted on to the usual Krause snare. The two upper ends of the Y are joined by a slightly curved surface, and the polypus is caught between the wire and this surface.

The loop is tightened in the usual way by approximating the two finger plates. When the polypus is withdrawn from the nose by simply separating the finger plates, the loop is reformed without the usual fingerling. As there is no knot or sharp twist in the wire, it has not the usual tendency to break.

In addition to its use for simple polypus, it is particularly adapted for the removal of moriform growths from the posterior end of the inferior turbinal, as the instrument can be passed with the loop retracted, and when in its right position the loop can be ejected, when it will take on any curve to which it has been previously bent.

The instrument can be used for the larynx as well as the nose.

Messrs. Meyer and Meltzer can supply the instrument complete or will make the addition to a Krause snare for a small sum.

Mr. Bennett thought the instrument very ingenious, but doubted whether its practical application would be very useful. He used snares made on the same principle, though less perfectly finished than Dr. Thorne's snare. The objection was that a wire coiled round a large surface did not cut through if the tissues were at all thick, and then one had to tear the polypus off. In all tough growths this defect would be found a serious one, for in such cases one would have to use considerable traction.

Mr. Atwood Thorne had just heard that a similar device had been shown in Berlin about a year ago, but this was news to him. In the cases in which he had used it the results had been very good.

A Case of Nasal Obstruction in a Woman aged 24.

Shown by Dr. Jobson Horne. The patient had recently come under observation on account of symptoms attributed to nasal obstruction. The history was that some six or seven years previously she had suffered in a similar way, and had had the inferior turbinated bodies removed. An examination of the nose showed that the inferior meatus was very roomy, and there was evidence of a "spoke-shaving" operation having been performed, probably some years before. The middle turbinated bodies on both sides were hypertrophied and the middle meatus obstructed. The tonsils were somewhat enlarged, and there was hypertrophy of the adenoid tissue on the post-nasal space.

Dr. Jobson Horne brought the case forward with reference to two points. In the first place, the spacious inferior meatus with free expiration, and the occluded middle meatus with obstructed inspiration, supported the observations recently made by Mr. Parker ("Journal of Laryngology, Rhinol., and Otol." Vol. XVI, page 345), on the directions of the air currents in the nose; namely, that the current of inspired air passed upwards and backwards through the middle and superior meatus, entirely missing the

inferior meatus, and that the current of expired air passed chiefly through the inferior meatus.

In the second place, the hypertrophy of the mucous membrane covering the middle turbinated bodies, for if so, whatever the immediate result might be from inferior turbinectomy with a view to reducing inspiratory obstruction, the ultimate result might be the reverse to that anticipated, and most disappointing.

Dr. Herbert Tilley was very interested in the case, because he believed the nasal obstruction to be due, not to any of the intranasal structures, but to collapse of the alae nasi. On asking the patient to breathe without a speculum in the nostrils, the alae nasi on inspiration were both sucked in, and on expiration a considerable nose was made. But directly a speculum was inverted the patient breathed quite freely and noiselessly. Under these circumstances he considered that to carry out any operative treatment inside the nose would be both unjustifiable and unscientific. The possible and probable explanation of the condition was that as a child the patient suffered from adenoids or some form of nasal obstruction, and as a result of disuse the soft parts at the entrance of the nostrils had not developed, with the result which was evident in the case exhibited.

Dr. Bennett said there was another interpretation of the obstruction beside that given by Dr. Tilley. In most patients a sense of greater freedom was given when a speculum was inserted into the anterior nares. In this particular case the obstruction was not so much a real obstruction as a subjective obstruction. The patient stated that the right side was fairly free, but that the left side seemed blocked. Careful inspection showed that the anterior part of the left middle turbinal was in contact with the septum. Such contact often gives rise to a sense of obstruction. It can be cured by treatment which prevents this contact. In some cases this can be effected by the galvano-cautery, but the best method is to snare off a little of the redundant tissue on the inner side of the turbinal body. It is unnecessary to remove any bony tissue. He had come to the conclusion that it was very important in such cases to carefully distinguish between what might be termed objective and subjective obstruction.

Dr. Scanes Spicer was glad to hear Dr. Tilley's remarks in reference to the collapse of the alae and the nasal vestibule as a

factor in obstruction. He did not remember to have heard any special reference at this Society's meetings made to this, and yet, in his opinion, a great deal could be done for that factor in many cases of obstruction. What was wanted in this case was to secure efficient action of the dilatores alae nasi so as to lift away the alae on inspiration. In many cases this could be effected by conscious education of those muscles by assiduous practice. In some of these cases this was much facilitated by a good stretching of the soft tissues of the alae nasi, with a Hill's dilator. This should be followed up by systematic lubrication of the nostrils, and the wearing at night of a support such as the celluloid nasal springs, or little pieces of red rubber tubing of the largest calibre the nostril could accommodate and as shallow as possible. Physical exercises also were adopted, which had the object of re-establishing the normal co-ordinated action between the alae muscles and the other inspiratory muscles. He had obtained markedly good results in many of his own cases, and he did not think this matter had been brought forward as prominently as its relative importance and efficiency demanded, though he had no doubt many members used these measures. It was, however, undoubtedly true that in a large proportion of cases the alar stenosis element was ignored.

Dr. Burt had seen a similar case, and did not think operative interference would be of any use. By putting in a tube to force the alae nasi to work well, some relief might be given. It was the only way in which he had been able to give relief in a case of his own, where the inferior turbinate body had been removed for some obstruction and the alae nasi had collapsed. He did not think for a moment from his experience that mechanical dilatation would give permanent relief, for if the dilator were removed the alae would soon fall in again.

Dr. P. McBride asked Dr. Spicer in what way he thought that forcible dilatation of the alae could possibly affect the collapse. As far as he understood the cause, the collapse was due to paresis and resulting flaccidity; how, then, could stretching of the alae possibly permanently enlarge the opening? He absolutely failed to see how it could be done. He was quite aware that Moritz Schmidt had written on the subject, and had come to the conclusion, after considerable experience, that mechanical dilatation, as accomplished by wearing a Feldbausch dilator, made the patients more

comfortable, but he was unable to see how forcible stretching could permanently affect a condition of this kind.

Dr. Scanes Spicer asked Dr. McBride what he desired to infer by the term paralysis in these cases.

Dr. McBride said there was a dilator nasi, and he presumed the term "paresis," as applied to these cases, stood for paresis of the dilator nasi. He asked if after these measures described by Dr. Spicer patency was restored. What was the permanent outcome?

Dr. Scanes Spicer could not admit a "paralysis" in the true sense from nerve lesion. He thought that from long continued disuse (1) the alar muscles were weakened and paretic; (2) that the soft tissues of the alae were stiff, rigid, and often contracted, and that the weakened muscles were unable to drag out the stiff tissues, especially when the action of the inspiratory air current led to a fall of atmospheric pressure in the nose; then the external atmospheric pressure drove in the alae. He would therefore describe the condition as one of functional paresis of dilators from disuse, combined with a stiffness or rigidity of cellular tissues from disuse, similar to what occurred in an over-rested joint. He would therefore suggest, as an explanation of forcible stretching of the alae, that the resistance against which the muscles worked was lessened, and they would overcome this lessened resistance in the same way that, after a stiff joint had been mobilized under anaesthesia, it could be moved after by its own muscles, and these could again recover good power by practice. It had happened to him several times that in the course of an operation under anesthesia for complex intra- and post-nasal stenosis, he had ended up with dilating the alae if collapsed and rigid, when immediately they began to resume their normal inspiratory rhythm, which was kept up afterwards by practice and tube supports.

Dr. McBride thought it would be most interesting if Dr. Scanes Spicer would show to the Society a case in which there was a collapse and in which this "mechanical dilatation" treatment had been tried, so that they could see if it was cured by that method.

Dr. Pegler said that with regard to the question raised by Dr. Jobson Horne as to whether in this case the middle turbinates were compensatorily hypertrophied, he did not think that these bodies were liable to this change. Here there was no hypertrophy of the left middle turbinate, but the right one showed signs of disease.

Dr. Mulligan asked if there were any observations in the literature of the subject on what the paresis of the dilators was really due to. Had any microscopic examination of the muscle been made? If there was really an atrophy of the muscle, dilatation such as described could not have any possible value. If the muscle was atrophied, and it was dilated, would not the cicatricial contraction tend to narrow still more the vestibule of the nose? He was not aware of any observations having been made on the subject, but it was certainly one which might with advantage be investigated.

Dr. Jobson Horne, in reply, said he was glad to have heard so many suggestions and remarks; at the same time, it was a little difficult for him to accept the theory put forward by Dr. Tilley, attributing the obstruction to collapse of the alae nasi. Dr. Horne said he was of the same opinion as Dr. Bennett in that the respiratory obstruction was caused by enlargement of the middle turbinated bodies and consequently narrowing of the meatus. He had brought the case forward mainly with reference to the two points stated in his opening remarks, but inasmuch as the treatment had been discussed he would mention that the patient had shown signs of commencing myxedema, and had been taking extract of thyroid gland with beneficial results and subsidence of nasal symptoms. The case was therefore of value in illustrating the advisability of looking further afield for a cause in some cases of nasal obstruction, and of not over-looking the possibility of commencing myxedema. He had no intention of suggesting further surgical treatment of the nose.

A Case of Syphilitic Laryngitis in a Man aged 52.

Shown by Dr. Donelan. The case had been brought before the Society on a previous occasion, since which he had been energetically treated by anti-syphilitic remedies, but though there had been improvement during the first few weeks, latterly the ulceration appeared to be spreading. The fixation of the left vocal cord was more marked than before, and he thought there was now evidence of malignancy, but desired the opinion of members.

M. de Santi thought it would be advisable to remove a piece of the growth and examine it microscopically. He thought it of a malignant nature. It certainly seemed to him to have altered a good deal since he last saw the case, there being greater thicken-

ing, ulceration, and fixity. But to clear up the diagnosis, recourse should be had to the microscope, and the case dealt with accordingly.

Dr. Donelan would endeavor to carry out the suggestions made by Mr. de Santi.

**Case of Very Extensive Destruction of the Interior of the Nose,
Due to Tubercular Ulceration, in a Woman aged 31.**

Shown by Mr. de Santi. The patient had been married seven years and had had one miscarriage. There was no history of acquired or congenital syphilis, and nothing to corroborate any such condition, except the state of the nose. For some four years the woman had suffered from chest trouble and hemoptysis, and for three years she had been suffering from disease of the nose and larynx. There were well-marked physical signs of phthisis in both lungs, abundant tubercle bacilli in the sputum, and the larynx showed tubercular disease with ulceration. The main point of interest in the case was the very extensive destruction of the nasal cavities; the whole of the bony and cartilaginous septum had disappeared, and the greater part also of the turbinals; there was consequently great external deformity, due to falling in of the bridge of the nose. There was still active ulceration going on in the nasal cavities and tubercular ulceration of the larynx.

Mr. de Santi had never seen such extensive destruction of the nasal cavities follow on tubercular infection, and although there was no doubt about the tubercular nature of the case he considered there was a strong suspicion that syphilis played some part in the causation, in fact, that the case was one of mixed infection. As bearing on this question of syphilis, one could see on looking at the pharynx that there was a fenestra in the posterior pillar of the fauces on the left side; this was suggestive of syphilitic ulceration. Treatment so far had been entirely of an anti-tubercular character, and had been fairly successful in keeping the lungs and larynx from a rapid advance of the disease. He, however, now proposed to try anti-specific treatment as well.

The President asked if the sphenoidal sinuses had been investigated. He understood there was no doubt as to the tuberculous nature of the case, but something else besides tuberculosis seemed required to produce the deformity, e. g. syphilis. Accessory sinus disease might also be present.

Dr. FitzGerald Powell thought the patient was undoubtedly suffering from tertiary syphilis. He thought that there was not any appearance typical of tuberculosis. In reply to Mr. de Santi he said he had looked into the larynx, which appeared to him (from what was necessarily a cursory examination) to be the seat of syphilitic disease. With regard to the nose, he was quite convinced that the extensive destruction of the soft tissues and bone was the result of syphilitic ulceration. The same remark applied to the large perforation in the faucial pillar. Notwithstanding the fact that tubercle bacilli had been found in the nose, and that there was said to be tubercular disease in the lungs, he maintained that the extensive destruction of the nasal tissues was due to syphilis. This case presented very different appearances to cases of mixed disease he had observed, and some of which he had shown at a former meeting of this Society.

Mr. de Santi, in reply to the President, said he had not examined the sphenoidal sinuses. He adhered to his decision that the case was a tubercular condition; but he also considered it almost certain that a mixed infection of syphilis and tubercle existed, for he himself had never seen such extensive destruction of the interior of the nose from tubercular disease alone.

Case of Ulceration of the Nasal Septum with Marked Pain.

Shown by Dr. Bennett. Miss H——, aet. 22, came first under observation in 1898. She was pale, tired, overworked, and suffering from frequent gastralgia.

The right nostril was obstructed. The septum of the nose was perforated, causing whistling respiration, and there was a good deal of tenacious muco-purulent secretion in the naso-pharynx. There was marked pain in the nose, and especially high up on the right side, where the tissues were considerably swollen.

The pain and swelling gradually increased. Incision of the swollen tissues and the application of ice during a period of several days did little good. Soothing antiseptic ointments, calomel fumigations, tonics, iodides, etc., were tried, but all without good result.

In July, 1898, the swelling became very great and the pain intense, so under ether some of the middle turbinal tissue was removed and the septum curetted. For a few weeks there was slight relief. The removed tissues were examined on more than one occasion, but no light was thrown on the cause of the ulceration.

During the last two years there had been gradual extension of the ulceration until nearly all the cartilaginous septum had been destroyed. There had been frequent small and occasional severe hemorrhages. The pain had apparently been very severe on one or other side, and often it had been accompanied by redness of the side of the nose. The swelling of the septum had been very great, and it must have attained a thickness of about one inch.

In March, 1901, she consulted Mr. Bond, who advised removal of middle turbinal tissue so as to prevent the pain caused by the pressure of the swollen tissue. In June I removed more of the middle turbinals, and freely curetted the septal swelling.

Although there is relief as regards the nasal obstruction, the pain still remains as severe as before.

Dr. Tilley said that the antra on both sides should be explored. From the right antrum at about the position of ostium, there was a small trail of yellow pus coming down. If there were pus in the antra, as he thought possible, he felt sure that their drainage would effect a considerable improvement in the condition of the nose. He had recently seen in consultation the case of a lady addicted to the cocaine habit, and who, under the influence of that drug, had picked away the whole of the cartilaginous septum, so that the combined nasal cavities were covered with a thin veneer of dried mucus and scabs producing an appearance identical with that showed by Dr. Bennett.

Dr. Dundas Grant considered it a tuberculous condition of the septum. It might be lupus. It was too extensive for any form of simple perforating ulcer.

Dr. Scanes Spicer asked whether the ulceration commenced on the cartilage or on the bone. If the former he thought it was lupus, if the latter, syphilis. He had had a similar case, and showed it at the Society some three years ago. It had remained practically the same.

Dr. Milligan thought it might be traumatic and the result of picking the nose followed by extensive ulceration. Was there any history to corroborate this view?

Dr. Lambert Lack suggested it might be a case of syphilis. He had never seen sinus suppuration cause a progressive destruction of the septum, whilst in cases of nasal syphilis, sinus suppuration was often seen.

Dr. Bennett, in reply, said there was no disease of the ethmoidal or sphenoidal sinuses, and he should be astonished if the antra proved to be affected.

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V. DIPHTHERIA, THYROID GLAND, ESOPHAGUS, ETC.

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VII. MASTOID AND CEREBRAL COMPLICATIONS.

Difficulties in Diagnosis of Certain Cerebral Complication of Otitic Origin. CHAVASSE. *La Parole.* Paris, Jan., 1902.

Necroses of Mastoid Process Consecutive to an Acute Otitis. ROYET. *La Parole.* Paris, Jan., 1902.

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X. MISCELLANEOUS.

Value of Eustachian Catheterization and of Oxygen under Pressure in the Cure of Catarrhal Otitis. FERRERI. *Arch. Ital. di. Otol. Rin. e Laring.* Jan., 1902.

Methodical Acoustic Exercises in Deaf-mutism. URBANTSCHITSCH. *La Parole.* Paris, Jan. 1902. p. 29-56.

Case of Jacksonian Epilepsy Resulting from an Ear Affection. CHAMPEUX. *Arch. Internat. de Larynx., d'Otol. et de Rhin.* Paris, 1901. XIV, 403.

Examination of the Hearing, Nose, and Nasopharynx of the Pupils of the St. Petersburg School for Deaf-mutes. GELLAT, (P. P.). *Vrach. Gaz.*, St. Petersburg., 1901. VIII, 823; 847; 866.

Departments of Immediate Surgery. Pt. 2, Diseases and Injuries of the Neck. CHUGAYEFF, (A.) VIII, 544 pp., 8v. St. Petersburg, 1901.

Compact Lipoma in the Pharyngo-Laryngeal Cavity; Subhyoid Pharyngotomy. POROSHIN, (N. N.). *Vrach, St. Petersburg.*, 1901. XXII, 1475.

BOOK REVIEWS.

The Eye, Ear, Nose and Throat Year Book, being Vol. III of The Practical Medicine Series. Edited by DR. G. P. HEAD, with the collaboration of Drs. Casey A. Wood, Albert H. Andrews and T. Melville Hardie. THE YEAR BOOK PUBLISHERS, 40 Dearborn St., Chicago, Dec., 1901.

Every progressive worker interested in our special literature should be pleased to carefully and critically scan the pages of this Year Book. After two years previous experience, the editors now have this work well in hand, and we note a constant improvement in the selection of the subject matter, and in the terseness with which it is presented.

We are sorry to note that the quality of the paper and the appearance of illustrations and press work is not quite up to the standard of previous volumes.

M. A. G.

The American Year-Book of Medicine and Surgery for 1902. (Surgery.) A yearly Digest of Scientific Progress and Authoritative Opinion in all branches of Medicine and Surgery, drawn from journals, monographs, and text-books of the leading American and foreign authors and investigators. Arranged, with critical editorial comments, by eminent American specialists, under the editorial charge of GEORGE M. GOULD, A.M., M.D. In two volumes—Volume I, including *General Medicine*, Octavo, 700 pages, illustrated; Volume II, *General Surgery*, Octavo, 684 pages, illustrated. Philadelphia and London: W. B. SAUNDERS & Co. 1902. Per volume: Cloth, \$3.00 net; Half Morocco, \$3.75 net.

The contents of this volume, critically selected from leading journals, monographs, and text-books, is much more than a compilation of data. The extracts are carefully edited and commented upon by eminent specialists, the reader thus obtaining a yearly digest of scientific progress and authoritative opinion in all branches of medicine and surgery. As usual, this issue of the Year-Book is not lacking in its illustrative feature, for besides a large number of text-cuts, the Surgery volume contains five full-page inserts. In every way the Year-Book of 1902 fully upholds, if it does not strengthen, the reputation won by its predecessors.

Last season there was a noticeable incompleteness of the chapter on Otology, and we specially indicated that the editor of this section failed to make any reference whatever to THE LARYNGOSCOPE. In the present volume there is a conspicuous absence of American literature in this chapter, and with the exception of one special journal, no reference to any other American medical journal whatsoever is made. It appears decidedly inconsistent that in a volume known as The American Year-Book, the chapter on Otology should be made up almost entirely of references from foreign authors and foreign journals.

In decided contrast to this, must be mentioned the chapter on diseases of the Nose and Larynx, which is distinctly and essentially an able, brief, annual review of the American literature of this field; and while frequent references are made to authors and journals abroad, every consideration is accorded our own progressive confreres.

M. A. G.

ABSTRACTS.

Some Details in Eustachian Catheterization.—DUNDAS GRANT (London)—*Journ. of Laryng.*, Sept. 1901.

The author emphasizes the importance of a rhinoscopic examination before an attempt is made to introduce the catheter. Cocain in the form of spray or application lessens the patient's sensitiveness and facilitates manipulation.

Numerous suggestions are offered in cases where nasal obstruction exists. The use of the nasal speculum will assist the operator materially.

M. D. LEDERMAN.

Nasal Prosthesis by Means of Injections of Solid Paraffine According to the Method of Eckstein.—BRÖCKERT—*Revue Hebdomadaire de Laryngologie, D'Otologie et de Rhinologie*, Dec. 7, 1901.

The author believes this method an important addition to modern surgery. The complications which have thus far been reported, such as two cases of pulmonary emboli, one by Pfannensteil 2, of Breslau, and the other by Halban 3, of Vienna, will probably be avoided by modifications in the composition, or by raising its melting point.

The advantage of paraffine over vaseline is that it is not absorbed, especially if rapid solidification is insured according to the method of Eckstein. A capsule of connective tissue is gradually formed, which prevents absorption.

The author reports two cases of saddle-back nose and one case of epicanthus, which were treated by means of injections of paraffine with permanently good results.

W. SCHEPPEGRELL.

A Criticism on Certain Aural Methods, Formulæ, and Diagnosis.—E. W. PYLE—*N. Y. Eye and Ear Infirmary Reports*, Jan. 1901.

The essential demand of this paper is for prophylaxis, the author admitting the intractableness of well established or chronic disease of the ear, with organic chancre. More attention should be paid to this feature of dispensary service, and more efficient home treatment secured. Hence, a chair of instruction for the propagation of prophylactic knowledge, in the treatment of the simpler conditions of disease (douche, syringe and general hygiene) should be established in every dispensary. The author details his methods of using the accessories and is explicit in his description of his ideas and methods in the treatment of tubal catarrh, the indications for instillations, post-auricular abscess, and the several conditions included under the acute inflammatory processes.

F. C. E.

THE LARYNGOSCOPE.

VOL. XII. ST. LOUIS, MO., APRIL, 1902.

No. 4.

ORIGINAL COMMUNICATIONS.

(Original communications are received with the understanding
that they are contributed exclusively to THE LARYNGOSCOPE.)

SOURCES OF ERROR IN FUNCTIONAL TESTS OF HEARING.

BY ALBERT H. ANDREWS, M. D., CHICAGO.

Professor of Otology Post-Graduate Medical School, Chicago; Professor of Otology Illinois
School of Electro-Therapeutics; Oculist and Aurist German-American Hospital

Functional tests of hearing are subjective, and as such require co-operation and accurate responses on the part of the patient. The tests require certain instruments and appliances which must be properly constructed and adapted to the purpose. The examiner must have a knowledge of the instruments used, a knowledge of the technique of functional examination, and be able to draw correct conclusions from the results obtained. From this combination of requirements, it is not strange that many errors should arise, nor is it strange that some observers are inclined to attach little importance to functional tests. The question has been frequently raised as to whether the knowledge gained by functional tests is sufficient to compensate for the time and trouble required in making them. While that particular phase of the question is not the subject of this paper, it seems in order to express the opinion that neither diagnosis, prognosis, nor rational treatment in many ear diseases, is possible without them.

A recent writer mentioned the disposition on the part of some to minimize their value and ventured the opinion that those who belittle the importance of these tests, usually possess very few instruments for making them and do not know how to use those which they have. Inability to verify diagnoses based upon functional tests, together with the more or less complicated technique probably accounts for much of the skepticism on this subject.

No attempt will be made in this paper to discuss the relative

value of the different tests nor their relation to diagnosis and prognosis; neither will it be possible to consider all of the sources of error in making such examinations. It will suffice to call attention to some of the more frequent errors and to suggest means of avoiding them. These errors may arise from: 1. Faulty constructed or poorly adapted instruments. 2. Failure on the part of the examiner to understand his instruments or to use them properly. 3. Failure on the part of the patient to promptly and accurately respond to the various tests.

The watch, the voice, the tuning-fork, the Galton whistle, and the various acumeters are satisfactory as hearing tests, but the tuning-fork and Galton whistle stand practically alone as instruments for making functional examinations. There is a great variety of tuning-forks on the market, each possessing some good qualities and most of them more or less serious defects. Tuning-forks may be divided into two general classes, those with weights and those without weights. The weighted forks have the advantage of being free from overtones, but are useless for testing bone conduction because of the jar transmitted through the handle, the sensation of which the patient is liable to mistake for sound. The chief defect in unweighted forks, especially those below C^3 1024 vibrations per second is the presence of overtones. Overtones are produced by short vibrations of the prong upon itself, while it is passing through its long vibration in unison with its fellow. A good test for overtones in a fork is to strike about the middle of the prong with some light, hard object as a pencil. The metallic ring is the overtone, and is one or more octaves above the true tone of the fork. In some forks two or more distinct overtones can be detected. In selecting a fork one should be chosen which has the least metallic ring when struck with a pencil. Overtones are especially objectional in testing the lower tone limits. In some of these cases the patient will give unmistakable evidence of hearing the low-toned fork when it is brought opposite his ear, while in reality he hears only the overtone which is one or more octaves above the true tone of the fork. In such cases the true lower tone limit is one octave or more above the apparent limit. Another objection to many of the forks is the long time which they continue to ring when once given their full initial vibration. If the object in making the test is only to determine whether the patient can hear the fork or not the long time which it may vibrate is no disadvantage; but if it is to be determined how long the patient can hear the fork, as in Schwa-

bach's test, then a fork should be selected which the normal ear can hear from 25 to 40 seconds. In the Schwabach test there are two objections to forks which can be heard longer than the time mentioned: 1. In making repeated tests in order to secure accuracy, much valuable time is lost while waiting for the fork to run down. 2. Repeated tests with forks which vibrate a long time are apt to wear out the patient's attention, so that after a few trials his replies are found to be uncertain. Before undertaking to make functional tests it is necessary to determine how long the normal ear can hear the fork used. The amount of impairment in any given ear may be expressed by a fraction the denominator of which represents the time a normal ear hears the fork, while the numerator shows the time the impaired ear hears it. Many of the published records of functional tests are of no value because the writer has failed to ascertain or neglects to state the time which the fork he used can be heard by the normal ear.

In comparing air conduction with bone conduction, it is generally understood that in the normal ear the fork should be heard when the handle is against the mastoid one-half as long as when the prongs are held opposite the meatus. While this is true in some instances, the relation is modified by certain conditions which do not seem to be generally understood. There is a wide variation in the relative time which different forks of the same pitch can be heard by bone conduction and by air conduction in the same ear. The shape of the fork, the size of the handle, and the temper of the steel each has an influence upon the relation between bone conduction and air conduction. I have two forks of about the same size, each giving 512 vibrations per second. Each can be heard by air conduction about 45 seconds. One can be heard by bone conduction 35 seconds, while the other can be heard by the same ear not over 15 seconds. Thus, it becomes apparent that it is necessary to establish a standard for each individual fork not only for air conduction, but for bone conduction as well.

In testing bone conduction it makes a decided difference upon what part of the mastoid the handle of the fork is placed, and also, whether the handle is allowed to touch the back of the auricle. In a series of cases recently tested in which there was no history of past or indications of present ear disease, three points of contact for the handle of the fork were selected as follows: 1. The tip of the mastoid. 2. A point behind the meatus corresponding approximately to the mastoid antrum. 3. A point immediately behind the

meatus, but in close contact with the back of the auricle. The average time which a given fork was heard on the tip of the mastoid was 25 seconds. Over the antrum 30 seconds, while in contact with the back of the auricle the same fork could be heard fully 40 seconds. Probably the best position for the handle of the fork is directly over the mastoid antrum. It also makes a difference as to the amount of pressure exerted upon the handle of the fork. In the series of tests already mentioned it was found that the fork could be heard five to eight seconds longer when deep pressure was made than when the handle was pressed lightly against the mastoid.

In testing air conduction it is a good plan to cover the patient's eyes and compel him to depend entirely upon his ears. When the patient can see that the fork is near his ear he is liable to imagine he hears it when the examiner knows that the fork is not vibrating. I have heard fairly sensible patients declare they could hear the fork when, to test their imagination, I held the fork by the prongs with the handle close to the ear. It is sometimes necessary to prove to the patient that his imagination is too vivid before accurate responses can be obtained. Whenever there is a suspicion of inaccuracy on the part of the patient the fork should be held in the hand so that the finger can be passed down along the prong of the fork, and thus gradually stop the vibrations. Often several seconds will elapse between the time the fork ceases to vibrate and the time the patient gives the signal agreed upon to indicate that he cannot longer hear it. In some cases a little time can be profitably spent training the patient to give prompt and accurate responses. Sometimes the tinnitus so closely resembles the sound of the fork that the patient is unable to tell when he has ceased to hear the vibrations. In such cases a fork of higher or lower pitch should be substituted. Repeated tests should be made for the sake of accuracy. In using the low forks the patient will sometimes insist that he hears the fork when he only feels the vibrations of air set in motion by the movements of the fork. Holding the open end of the fork toward the ear will obviate this difficulty. In making qualitative tests it is essential to keep the hair away from the ear, for if the vibrating fork comes in contact with a few stray hairs a sensation will be produced which the patient may mistake for sound. Some of these people, especially deaf-mutes, become exceedingly sensitive. In a case recently reported a deaf boy, though blindfolded, raised his hand regularly when the fork was

brought near his ear, whether the fork was vibrating or not. It was found that the fork being cold produced a sensation when brought near his ear, which he mistook for sound. After the fork had been warmed he was no longer able to respond when it approached his ear.

In the lower forks the vibrations transmitted to the handle is much greater in proportion to the volume of sound than in the higher forks.

In testing bone conduction for the lower tones, it is difficult to determine whether the patient hears the fork or feels the jar transmitted to his head. Some patients are able to differentiate between the two sensations, while others admit that they cannot be sure whether they feel the vibrations or hear the sound. Considering that the patient's mind is centered on the subject of hearing and remembering the influence of the imagination, it is fair to assume that the patient often deceives himself in the matter. However desirable accurate measurements of bone conduction in the lower tones may be, I am not aware that any plan has as yet been devised whereby this may be secured. This problem, with a number of others pertaining to functional tests, remains to be solved.

100 State Street.

AN UNUSUAL CASE OF HYPERPLASIA OF THE NASAL MUCOUS MEMBRANE.

BY CHARLES A. TODD, M. D., ST. LOUIS, MO.

Clinic Ear, Nose and Throat, St. John's Hospital.

In January, 1901, Mr. M., student, 18 years old, of slender build, but in good general health, home in the country, came to me for nasal treatment.

From infancy Mr. M. had suffered from obstructed nasal respiration. His mother states that when an infant she noticed his nostrils were blocked and that he usually slept with mouth open. Mr. M. is positive that there was no nasal discharge, muco-purulent or other. Since his tenth year he has had every autumn "hay fever," the attacks of late years regularly getting worse and lasting from the middle of August to October; an "asthmatic" cough much aggravating the condition, also, the eyes being so affected as to require green spectacles. The cough and general debility would keep him in bed several days.

Examination shows great thickening of the tissues over all the turbinated bones as far as they are visible, i. e., whole length of the inferior turbinated, especially at the extremities; the posterior exhibiting characteristic livid and granular enlargements. Both middle and upper turbinates have like appearance posteriorly, the middle being abnormally large throughout. By anterior inspection the color of the mucous membrane is that noted in hypertrophic rhinitis. There is no noticeable mucous discharge. On the inferior part of the anterior lip of the left Eustachian tube is a small livid granulation. Right nostril is considerably narrowed by a septal spur. Both jaws are much contracted anteriorly with a high, arched palate, and the front teeth are badly crowded out of position.

January 19. Cut away with the Bosworth wire snare the posterior extremity of the left inferior turbinated. Found the tissues very dense and resistant, so that quite a little time was required for the amputation. There was a free hemorrhage at first and a later oozing that persisted into the next day. The piece cut off was cavernous and evidently composed mainly of fibrous tissue. In using Bosworth's snare in such a case I have found it helpful to convert it into an *ecraseur* by fastening one end of the wire to a

fixed point on the shaft while the other moves with the slide; thus an effective cutting as well as crushing action is secured. As Mr. M. could not allow his studies to be seriously interfered with, all subsequent operations were made at considerable intervals.

January 23. The snare was used on the anterior extremity of the left inferior turbinate, and February 4, on its middle part. April 8 operated on the posterior end of the right inferior turbinate, after having previously cut away the anterior end as well as the above mentioned septal spur. After the first operation, January 19, all bleeding was readily controlled with cotton tampons, and the patient continued his studies without interruption. He went home after the last operation in a vastly improved condition; nasal respiration was free and unobstructed for the first time in his life, his whole expression of face showed the immense relief that he had experienced.

Returning in the autumn, he reported that he had been comfortable all summer and had been able to work in the field without difficulty. The customary hay fever attack was light, he had but two or three bad nights from the cough and was able to be about every day; also, the eyes gave no trouble. In November I cut away all the remaining excess of tissue over the middle of both inferior turbinates with scissors and knife, which ended my operative treatment, as his respiration was all that could be desired. So far as could be made out by questioning and experiment, his sense of smell was not impaired.

April 7, 1902, a final examination shows respiratory passage right and left, roomy; mucous membrane over inferior turbinates, and anterior part of middle looks as in chronic catarrhal rhinitis, only there is no discharge. Occasionally the one or other nostril becomes somewhat obstructed, as in catarrh, which suggests a further treatment by local applications. As Mr. M. was having his teeth regulated during the winter, operation on the middle turbinates was thought inadvisable, the nasal condition being satisfactory to the patient. During a practice of more than twenty-five years, not having seen nor heard of a similar case, it seemed to me worthy of being recorded. If we accept the positive denial of any muco-purulent or other nasal secretion in early life, can this be considered a case of *congenital* hyperplasia of the nasal mucous membrane?

SECONDARY HEMORRHAGE ON THE FIFTH DAY AFTER TONSILLOTOMY.

BY LEE WEBER, M. D., DAVENPORT, IOWA.

Secondary hemorrhage after tonsillotomy being one of the dangers which every operator must be prepared to meet, whatever be his method of operating, and cases presenting unusual features being of interest and value, I desire to report the following case:

Miss A. Z., age 5, was seen at the request of Dr. F. Lambach, on account of enlarged tonsils and mouth breathing. The child was pale and anemic, and presented the usual picture of such cases. The tonsils were considerably enlarged, very hard and tough, rather oval in shape and projected more backward and upward behind the posterior pillars than toward the median line.

The cervical lymphatic glands were much enlarged and quite hard, with little tenderness on palpation.

Removal of the enlarged tonsils was decided upon and as the child was very tractable, being an ideal patient, and owing to her general condition, it was decided to not give an anesthetic.

The operation was done on the afternoon of February 16, 1902, both tonsils being removed with the tonsillotome.

The usual amount of hemorrhage followed the operation, and ceased entirely in about fifteen minutes. It was noted at the time of operation that the left tonsil offered considerably more resistance to the cutting blade than did the right one. The case progressed without event except a slight cough and by the third day the patient was feeling much better than before the operation, the enlarged cervical lymphatic glands had perceptibly diminished in size and food was taken without discomfort.

On the morning of February 21, Dr. Lambach was called to the house because the child had vomited a considerable quantity of blood. He found a slight oozing hemorrhage from the left tonsil which was checked by a gargle of dilute Monsel's solution. On the afternoon of the same day we were called hastily to the house because of renewed hemorrhage which had become alarming. When we arrived the child was unconscious, having been so for some minutes, was cold, pale, and with the circulation very weak. The hemorrhage had ceased. Dilute alcohol was administered by the

mouth, strychnine given hypodermically, and hot water bags placed to the body and limbs. Saline transfusion was considered, but was not necessary, as in a few minutes consciousness was regained and pulse and respiration improved.

An ice bag was applied to the left side of the neck and the child kept quiet. It was thought best to not attempt any local applications for fear of causing renewed hemorrhage. During the afternoon the patient had vomited large quantities of clotted blood, which had been swallowed. No more hemorrhage occurred for about two hours, when on making an attempt to vomit it was renewed and could be seen to come as bright blood from the upper part of the left tonsil. As soon as possible an application of adrenalin chloride, 1-1000, was made to the bleeding surface with a cotton swab, but it had little or no effect. Several applications of Monsel's solution were made, which checked the bleeding, and it did not recur.

About an hour later the remainder of the blood in the stomach was vomited, but the exertion did not cause a renewal of the hemorrhage and there was no more bleeding at any time. The child was kept recumbent with an ice bag on the neck for the entire night, small doses of Dover's powder given, and cracked ice to suck.

The patient was kept as quiet as possible in bed on liquid diet for several days, and nothing further interfered with recovery. It seems probable that in this case the coughing caused the loosening and removal of the clots in some of the wounded vessels, which allowed the oozing hemorrhage.

The blood was swallowed, causing the nausea and then the more violent exertion of retching and vomiting caused the later and more severe hemorrhage.

The two points of especial interest in the case are that a secondary hemorrhage should occur in one so young, 5 years, and that it should have occurred on the fifth day after operation; must be very unusual, as I have not been able to find, in any of the literature at my command, any reports of secondary hemorrhage after tonsillotomy occurring later than the third day, except the case reported in the February Laryngoscope by Dr. Dunbar Roy.

No. 2 Whitaker Building.

CORRESPONDENCE.

Evansville, Ind., March 10, 1902.

Editor The Laryngoscope:—

I have read with interest Dr. Dunbar Roy's article in the February number of the Laryngoscope on "Two unusual cases of hemorrhage following Adenotomy and Tonsillotomy." Allow me to report two similar cases from my practice.

Case 1. Miss R., age 7, hypertrophy of faucial tonsils and adenoids. Part of one tonsil was removed by a prominent local general surgeon. Under chloroform anesthesia (the family physician, Dr. L., administering the anesthetic), I removed the tonsils with a tonsillotome and the adenoids with forceps and curette. There was very little bleeding and the little patient got along nicely. Fourteen days after the operation she accompanied her parents to Henderson, Ky., on the steamboat, and while there she drank some wine. Coming back home in the evening she ran up the levee and on arrival at the residence the parents noticed that she was spitting up considerable quantities of blood. The family physician was sent for and he discovered that the blood came from the vault of the naso-pharynx. The Doctor at once sent for me, but, being engaged elsewhere, I did not reach the house until late in the night and found that the hemorrhage had stopped. The mother had given the child table salt by the handful, which produced nausea and vomiting and cessation of the bleeding. The patient lost a considerable quantity of blood.

Case 2.—Miss M., age 12, was referred to me by her family physician in Kentucky. She was brought to my office September 3, 1901, by her mother. She was a mouth breather, very nervous and pale, but seemed well nourished. On examination I found enormously enlarged tonsils, also adenoids in the vault of the naso-pharynx. On physical examination I discovered no contra-indications to the administration of an anesthetic.

The operation was performed in one sitting under chloroform anesthesia; my assistant, Dr. M. Ravdin, administered the anesthetic. I removed both tonsils with tonsillotome and the adenoids with forceps and curette.

My assistant remained at her bedside in the hotel until she came out from under the influence of the anesthetic. There was very little hemorrhage. Next morning I saw patient at my office and everything looked nice. With the usual advice as to diet and quietude I allowed her to return home. September 12, I received a letter from her family physician stating that Miss M. got along nicely after her return home—he having seen her every day—until the 10th of September, seven days after the operation, when he was hurriedly called to see the patient who had vomited a considerable quantity of blood. On arrival he found the hemorrhage coming from the tonsils and it took him considerable time before he succeeded in stopping it. Now the interesting points in my cases are, in the first case, secondary hemorrhage fourteen days after the operation; and, in the second case, seven days after. I am

Yours most respectfully,

S. J. Knapp, M. D.

DENVER, APRIL 15, 1902.

EDITOR "THE LARYNGOSCOPE:

I find I made a mistake in my article "Operation for the Removal of Septal Spurs," in the March number of the LARYNGOSCOPE. I spoke of using the "Detroit" hand-piece. I should have said the *Doriot hand-piece*. This hand-piece is operated by an all-cord engine and not by a flexible shaft.

Very sincerely yours,

MELVILLE BLACK, M.D.

THE NOSE AND THROAT IN THE HISTORY OF MEDICINE.

BY JONATHAN WRIGHT, M.D., BROOKLYN, N. Y.

(Continued from page 216.)

THE NINETEENTH CENTURY—THE PRAE-LARYNGOSCOPIC ERA.

Laryngeal
Phthisis.

Littre* seems to think a passage in "Diseases II." is a proof that Hippocrates, or rather the author of this Hippocratic treatise, had observed phthisis laryngea, because he alludes to ulcers in the tube of the lungs. If we are to suppose that this book had its origin in the School of Alexandria, where they were familiar with the dissection of the human body, this may be a valid conjecture.

Before the advent of laryngoscopy there was considerable progress made not only toward the correct understanding of tubercular disease, but towards the recognition of its manifestation in the larynx. Virchow has pointed out† how a mistaken interpretation of Sylvius de la Boe led him to confound small tubercular cavities in the lungs with suppurating conglomerate glands. Clinical observation had frequently noted the enlargement of the so-called conglobate glands associated with evidences of pulmonary phthisis. From this, and subsequently through the works of Morgagni, Cullen and many others, the conception gradually arose that there was a pathological connection between vomicae in the lungs and the enlarged lymph glands. This is a singular instance of how out of error much that is true in pathogenesis arose. We have seen Sylvius de la Boe interested in separating the conglobate from the conglomerate glands, and we need not, therefore, be surprised at finding him mistaken as to the cavity of the dilated conglomerate glands being identical with foci of suppuration in the lungs.

Morgagni.

The history of the growth of our knowledge of laryngeal phthisis is usually traced back to Morgagni. Again we note that growth means differentiation. Tuberculosis and syphilis are inextricably confused in the early accounts of phthisis laryngea. According to Morgagni in his discourse on the lesions of respiration‡, Fantoni had noted in the cadaver of a man the mucosa of the arytenoid carti-

* Littre: "Œuvres Complètes d'Hippocrate," Tome VII. p. 77.

† "Die Krankhaften Geschwülste" III, 621 et seq.—Ed. 1867.

‡ "De Sedibus et Causis Morborum." No. 12.

lages so ulcerated and thickened that there only remained a very small laryngeal opening through which the patient, who had lived in this condition a long time, had breathed with great difficulty. Morgagni then described the case of a woman of forty who had been asthmatic for some time, and she having died nothing was found in the lungs or brain to account for her symptoms. At Morgagni's suggestion, the larynx was brought to him. He opened it from behind and pus of a grayish color flowed out, and from such a situation that the swelling it caused must have projected into the larynx and produced dyspnoea. Notwithstanding this memorable case has been frequently cited as one of tubercular laryngitis, I am very much of the opinion that it was a case of syphilis. However that may have been, evidently it, with some other similar observations reported by Bonet, Santorini and others, impressed Morgagni with the necessity of directing attention to the larynx in cases of dyspnoea, not only at post-mortem examinations but clinically. He did not fail to lay emphasis on this point, and his remarks soon aroused interest in the study of such lesions.

Lieutaud, who, in a very inferior manner, continued the work of Morgagni, reported* several cases, which at post-mortem presented lesions in the larynx which may have been tubercular.

Petit (1790), Portal (1792), Sauv  (1802), Saignelet (1806), wrote theses on laryngeal phthisis in which it is difficult to separate the syphilitic from the tubercular cases, but in which the various symptoms and lesions common to both are set forth at length.

Matthew Baillie,† in 1793, noted frequent appearances in the lungs at post-mortem to which he gave the name of tubercle, but he declared they did not occur in the branches of the trachea "where there are follicles. They are solid or they may break down." Nevertheless, it would appear, in the edition published in 1825, after his death, that he had observed the walls of the trachea thickened and the mucosa covered by little hard tubercles accompanied by a scirrhus affection of the glands. He also referred to inflammation of the tracheal mucosa and its ulceration "where there are scrofulous abscesses of the lungs. The same appearances are observable in the mucous membranes of the larynx."‡

* "*Histoire Anatomica Medica*" Tom. II, Lib. IV., p. 297, seq. 1767. Obs. 65, 67, 67a, 68. The last observation presents more satisfactory evidence of the lesions having been tubercular than the others.

† "*Morbid Anatomy of Some of the Most Important Parts of the Human Body.*"

‡ *The Works of Matthew Baillie*, Vol. II, p. 84, et seq., 1825.

Laryngeal
Tubercle.

Whatever may have been the real conditions referred to by Bailie, Broussais* in 1806 noted white miliary tubercles in the larynx of a man dead of pulmonary phthisis. There was also an ulceration in the ventricles of the larynx. His observation seems to have been first published in 1816. Previous to this Bayle† had published his varieties of phthisis pulmonalis, the first of which was tubercular. He described its three stages, the state of tubercle, its softening, its cavernous or cystic stage. He is also said to have been the first to make use of the term "tubercular diathesis."‡

While, therefore, tubercle had been recognized, not only in the lungs but in the larynx, before Laennec's publications, he more clearly and definitely than others pointed out the characteristic lesion, to which he himself fell a victim, dying in 1826, at the age of forty-five. In his treatise on the Diseases of the Chest,§ he thus defines phthisis pulmonalis at the beginning of his book: "The existence in the lungs of those peculiar productions, to which the name tubercle has been restricted by modern anatomists, is the cause and constitutes the true anatomical character of consumption." He described their formation, regarding them as adventitious matter forming in the pulmonary tissue.

A very full and satisfactory account of the condition of the knowledge of laryngeal phthisis prior to Louis' celebrated work may be found in the thesis of Pravaz.|| Unfortunately we are still in a position to thoroughly understand the vivid impression made upon the author by the death of his mother from this formidable affection, and we also understand his bitter quotation of the expression of Asclepiades in regard to Hippocratic medicine where he says it was the contemplation of death. He says: "No one can doubt to-day that laryngeal phthisis may exist primarily." This to the modern reader is explained by the citation of such cases, cured by the administration of mercury.

There is a notice in a publication¶ in 1818 that creosote was used in the form of a fumigation of tar, and it was suggested that this might be useful in laryngeal phthisis, but as a rule treatment was regarded as of no avail.

The advent of the more exact methods of diagnosing pulmonary disease by physical examination, corresponding to the more

* "Histoire des Phlegmasies," 1816. Tome I, p. 372.

† "Recherches sur la Phthisie Pulmonaire," 1810.

‡ "Journ. de Med. Chirurg. Pharm.," etc., An. XI, T. VI, p. 28.

§ Translated by John Forbes, 1823.

|| "Resherches pour servir a l'Histoire de la Phthisie Laryngée. Thèse de l'Ecole de Médecine de Paris," No. 56, 1824.

¶ "Dictionnaire des Sciences Médicales," 1818, Vol. XXVII, p. 264.

general study of its anatomical lesions, resulted in a considerable increase of attention given to tubercular lesions of the upper air tubes. The work of Louis* forms an integral part of the history of Phthisis, but in a work of more than 500 pages hardly fifty are devoted to the manifestations of the disease in the "tracheal artery," the larynx and the epiglottis. To the lesions of the latter he devoted especial attention. In 102 cases at autopsy the upper air tubes were examined and lesions were found—of the epiglottis 18, of the larynx 22, of the trachea 31. While he did not recognize, as did Broussais, tubercle in the larynx, he supplemented the work of Laennec by its careful description in the lungs. The work of Louis is more frequently quoted in laryngology as having given origin to the idea that the ulcers of the larynx in phthisis are due to the mechanical raspings of secretions, cast off from the tubercular lesions of the pulmonary tissue. This mistaken conception has hardly yet entirely disappeared from our nosology of disease, in spite of the early work of Rokitsansky and Virchow. This was asserted not only in the first edition of his work, but repeated in the second edition in 1843. He seems to have been the first to use the term and draw attention to the existence of latent phthisis, a matter with which advancing sciences has made us more familiar.

Louis on Phthisis and Catarrhal Ulcers of the Larynx.

"Latent Phthisis."

While far less exhaustive and valuable we may note in the work of Andral in 1834† more accurate views than those of Louis as to some matters pertaining to laryngeal Phthisis. He gave a long description of it, noting the occurrence of tubercle in the larynx.

Barth, writing in 1839, referred to fifteen or sixteen authors who had by that time written on the subject of laryngeal phthisis. By far the most exhaustive and the most valuable was the work of Trousseau and Belloc‡, which still remains a classical authority on the subject. Their differentiation of the lesions was still far from perfect, but they were aware of this confusion in the works of previous writers. Thus they quote Borsieri as saying in 1826, "There are those who think ulcers of the larynx and the aspera arteria, because they are not situated in the lungs, should be excluded from phthisis. However, from these lesions also the body often wastes away, and is consumed by a slow fever just as in the parent disease." Their assertion that he was the first to recognize laryngeal phthisis as in itself an essential disease is, as we have seen, hardly accurate. They included in their category of laryngeal phthisis:

Trousseau and Belloc.

* "Recherches Anatomico Pathologique sur la Phthisis," A. Louis, 1825.

† "Clinique Medicale."

‡ "Traité Pratique de la Phthisie Laryngée de la Laryngite Chronique, et des Maladies de la Voix," 1837.

1. Simple laryngeal phthisis produced by the common causes of inflammation in general, without pulmonary phthisis. *

2. Syphilitic laryngeal phthisis.

3. Cancerous laryngeal phthisis.

4. Tubercular laryngeal phthisis.

Notwithstanding their recognition of tubercle in their last division, we see in their first the influence of the catarrhal theory of Louis, and the evidence of insufficient differentiation and faulty diagnosis, while their other two classes give evidence of a considerable advance in differential diagnosis over the works of their predecessors. Practically, however, when we come to study the reports of many of the cases classified thus, we will find considerable confusion. In this respect the slightly later memoir of Barth* gives evidence of a more correct understanding, as he separated more intelligently the syphilitic from the tubercular cases. We may now note the beginning of a more careful limitation and definition of the word tubercle. Hodgkin† notes a distinction, first that the term is applied to the shape or contour of a formation, and second to adventitious deposits as first used by Laennec.

Rokitansky.

We have now arrived at the time of Rokitansky, who inaugurated a system of study of morbid lesions, which was far in advance of anything which had yet appeared in Medicine. Many of his ideas are now rejected, but many more contained the germs of doctrines which still rule in the field of pathological medicine. In accuracy they were far in advance of contemporaneous research, and rapidly gained almost universal acceptance, especially his errors. He also looked on tubercle as an exudate of coagulated protein stuff, and in this era, when the knowledge of the cell was still in its infancy, he asserted that this exudate was embryonic tissue, or Blastema which had not yet undergone organization.‡ He nevertheless recognized that the ulcers occurred from the breaking down of this tubercular exudate. He regarded primary tuberculosis of the larynx as an exceedingly rare affection. The lesion of tubercle was more carefully described than ever before, and at last we note there is here§ no indication of his confounding it with syphilis. In continuing the history of the old conception of tubercle, I need only refer to the

* *Mémoire sur les ulcerations des voies aériennes.* "Archives Generales de Medicine," 1839, 3me, serie No. 5, p. 137.

† "Lectures on the Morbid Anatomy of the Serous and Mucous Membranes," by Thomas Hodgkin, 1840, Vol. II, p. 132.

‡ "Handbuch der Path. Anat.," 1846, B-d. 1, p. 391.

§ I., C., Vol. III, p. 36.

paper of Rheiner, ten years later*, in which again appeared the idea of Louis, that the ulcerations of laryngeal phthisis are mechanical and catarrhal in their origin.

We may here take note of matters of further interest in the works of Rokitansky. In spite of his careful observations he spoke of the existence of dilatation of the larynx, corresponding to the condition of bronchiectasis in the lungs. He dealt in a systematic way with the hyperæmia and anæmia, the acute and chronic inflammations of the mucosæ of the upper air passages, their hypertrophy and atrophy, noticing the changes in the glands and describing polypi as a result of inflammatory action. It is a little difficult to understand the nature of the condition he refers to as blennorrhoeal catarrh and stenosis of the larynx. Besides his mistaken conception of tuberculosis, he more accurately described the exudative processes of croupous inflammation, dividing them into several varieties, including the "true croup" of children. He spoke of the lesions in the air passages of variola and typhus fever as submucous processes involving ulceration of the mucosa and perichondritis. He described benign epithelial growths, mucous polypi, and the laryngeal excrescences of syphilis and tuberculosis. Fibrous tumors are also noted as well as malignant growths. In short, in the pathology of the larynx as well as in that of other regions we cannot fail to remark the great services rendered by Rokitansky. Unfortunately lesions in the air passages above the larynx did not receive the same careful study at his hands.

As a contrast to the importance which the word tubercle has assumed in our terminology, the reader of the medical literature of this period will find much said of another phenomenon of disease in the larynx described by Bayle. Among the conditions which later studies in pathology have banished from the nosology of disease as an entity in itself, we frequently recognize the term *Oedematous Laryngitis*. The early treatise of Bayle† in 1817, however, cannot be justly blamed for having failed to give the term its proper place, for the author declared that it was a stage of many local and general diseases. Nevertheless many subsequent writers accepted the designation as creating a proper basis of classification for many cases. Sestier,‡ especially, in a voluminous work in 1852 attempted to bring many fundamentally dif-

*Oedematous
Laryngitis.*

* "Virchow's Archiv." B-d, V. 1853, p. 534.

† "Gedème de la Glotte ou Angine Laryngée GEdemateuse. Dict. des Sciences Médicales." T. 18, p. 505.

‡ "Traité de l'Angine Laryngée GEdemateuse," 1852.

"Ludwig's
Angina."

ferent pathological conditions into one category on this basis. Some years before this D. Ludwig* described a clinical condition arising from infection of perilaryngeal tissues which is still described under his name. "Ludwig's Angina," on any basis of etiological classification, in spite of its peculiar condition of board-like hardness, deserves, as little as Bayle's "Oedematous Angina," a place in modern nosology.

The Cell.

We cannot proceed further in an intelligible account of any part of the history of medicine without a few words as to the history of the discovery of the cell. It would be difficult to understand how the early microscopists failed to note more frequently and to study more carefully this unit of all living matter in the animal and vegetable world, were we to forget the small range of their magnifying glasses, the imperfection of the correction of the aberration of light, and more especially the imperfect technique in preparing solid tissues for microscopic examination. An English physician, Robert Hooker, in 1665, examining with a glass a little section of cork, saw cavities in it which he called cells and likened to a honey comb. Subsequently, in 1671, Grew and Malpighi comprehended something of the significance of this discovery of the structure of the vegetable kingdom. It was another Englishman, Robert Brown, who first noted, in 1831, that in many families of plants a circular spot which he named areola or nucleus was present in each cell; and in 1838 M. J. Schleiden asserted that a similar spot or nucleus was a universal elementary organ in vegetables. The same phenomena had begun to be observed in animal structures, and in 1839 Schwann, a pupil of that man of genius, Johannes Müller, announced the important generalization that there is one universal principle of development for living organisms and that is the formation of cells.† The fruits of the labors of these men and others, their predecessors and contemporaries, were spread broadcast over all fields of medicine, and Virchow's apothegm "Omnis Cellula Cellula" became the shibboleth of pathology after the middle of the century.

Epithelium of
the Mucous
Membranes.

Henle‡, as early as 1838, declared that the mucous membranes of the body are lined with epithelium, and in regard to the nasal mucosa he said: "From the openings of the nares the pavement epithelium extends internally for some distance upon the nasal sep-

* "Medizinische Correspondenz Blatt des Wurtem. Arzte. Verein," II-d. VI, No. 4, Feb. 5, 1836, p. 21.

† Vid. Sir William Turner's Presidential Address, "The Popular Science Monthly," October and November, 1900; also Hennequy: "Leçons sur la Cellule," 1896.

‡ "Archiv. für Anatomie, Physiologie," etc., 1838, p. 103.

tum as well as upon the alæ nasi, on a line which, upon the septum and upon the lateral walls of the nose, one may imagine as being drawn from the free border of the nasal bone to the anterior spine, occurs the change from a pavement epithelium to a ciliated epithelium." Later, in 1843*, he more exhaustively treated the whole subject.

William Bowman† in 1845 described the sweat glands of the skin as tubular diverticula. He subsequently‡ described similar structures in the nasal mucosa, which in the meanwhile Kölliker§ had also noted in the mucosa of the upper part of the nose, and to which he had given the name of Bowman's glands. The racemose glands of the mucosa, as we have seen, had long since been known. Henle (l. c.) had regarded the tonsils as of a similar nature, and even as late as 1866|| he is somewhat obscure as to their character, retaining the old name suggested by Sylvius de la Boe of the conglobate glands of the pharynx. It was Kölliker¶ who first properly described these structures at the base of the tongue and in the fauces. He studied them in their simple forms in animals, but while he described the folds and depressions of the mucosæ and the follicles in their walls and the epithelium, the finer structure of the lymphatic network escaped the comparatively feeble powers of his microscope. He described the normal tonsils as "Balg-Drüsen," *i. e.*, closed, ductless glands developed in the walls around the depressions in the mucosa.** Much contention arose as to their nature. Henle (l. c.) Sappey††, Sachs‡‡ and others regarded them as true acinous glands, the lymph nodes being the acini and the invagination of the epithelium we call lacunæ being regarded as ducts. One may see in the plates of Sachs the errors into which this school fell. Sappey, in a later edition of his great work, failed to repeat this explanation of the tonsils. Brücke had also declared the tonsils were simply lymph glands, and Billroth§§ called them

The Tonsils.

* *Historie des Tissus*, in the "Encyclopédie Anatomique," Vol. VI.

† *The Physiological Anatomy and Physiology of Man*, Todd and Bowman, Vol. I, Cap. XIV, pp. 406-426, 1845. Also to be found in "The Collected Papers" of Sir W. Bowman, 1892.

‡ l. c. II. The second volume was not published until 1856.

§ "Handbuch der Gewebslehre," 1852.

|| "Handbuch der Eingeweidelehre des Menschen."

¶ "Mikroskopische Anatomie, oder Gewebslehre des Menschen," B-d II, 2, 1852.

** Huxley: "Quarterly Journal of Microscopic Science," Vol. II, 1854, p. 82, who translated Kölliker's work into English, declared in his luminous language, "So far as its structure is concerned, in fact, the tonsil exactly represents a lymphatic gland, developed around a diverticulum of the pharyngeal mucous membrane."

†† "Traité d'Anatomie," T. 3, p. 43, Ed. X, 1857.

‡‡ "Müller's Archiv," 1859, p. 196.

§§ "Beiträge zur Path. Histologie," 1858.

follicular glands. Although the latter thus agreed with Kölliker and Gerlach in properly regarding them as part of the lymphatic system and related to the Malphigian corpuscles of the spleen, their conception of them was that the follicles, or, as we call them, the nodes, were really closed sacs holding grumous material, the round cells being apparently held in solution. The finer inter-cellular structure was yet to be elucidated by the investigations of His in 1862, and the curious arrangement of lymphoid tissue around the juncture of the food and air passages was pointed out by Waldeyer in 1884*, and "Waldeyer's Ring" is now a well known but as yet little understood apparatus.

The structure of the faucial tonsils, therefore, had been largely elucidated before the development of the specialty of laryngology, and the same may be said of their abscission, which indeed we have seen fully described in the very earliest of medical annals. Even Middeldorpf had already described† his method of ablation by means of the galvano-cautery snare. Before this the original forms of the tonsillotome now in use had been devised. The inception of the

Tonsillotomes. McKenzie tonsillotome may be seen on referring to Bell's "System of Surgery," published in 1791 (Vol. III, p. 87). This was modified in 1828 by Philip Lyng Physick‡, who first used it for amputating the uvula, adapting it subsequently§ to the tonsils, and using a forceps to drag them through the loop of his instrument.

Out of this grew another device for the same purpose. Fahnstock||, four years later described the instrument which was adopted and modified somewhat in France, and is now known under his name or that of Matthieu.

Horace Green. One of the striking incidents in the history of laryngology was the storm aroused in America, in the decade preceding the announcement of Garcia, by the persistent claims of Horace Green. The question as to whether it was possible to introduce, per vias naturales, a probe into the box of the larynx seems, on the eve of the discovery of the laryngoscope, to have been the most inconsequential of contentions, yet it excited in New York, and to some extent in London and Paris, the bitterest feelings of resentment, anger and opposition. The only explanation of the importance which was at the time attached to this contention would seem to have been the latent idea, that if they once succeeded in performing this feat of

* "Deutsch Med. Woch.," May 15, 1884, p. 313.

† "Galvanocautic," 1854.

‡ "American Journal of the Medical Sciences," 1828, Vol. I, p. 262.

§ l. c., Vol. II, p. 116.

|| "American Jour. Med. Sc.," 1832, Vol. XI, p. 249.

legerdemain, all the ills of the larynx would be cured. But if one may conjecture that this was the idea which lent importance to the controversy fifty years ago, it is impossible to fathom the reason which has occasionally led writers since then to regard this episode, in the history of laryngology, as anything more than a lamentable example of how coteries of medical men will insult one another, and transgress the bounds of decency in their discussion of a trivial matter. We have seen how Hippocrates referred to passing tubes into the air passages, and how it is mentioned in all præ-Renaissance medical writers. We shall see later in the history of intubation, how Desault, Loiseau, Bouchut, fully demonstrated the possibility of introducing instruments into the larynx from above. Horace Green was persecuted and reviled for claiming he could perform this operation, but this is only a part of the story. He laid himself open to criticism by claiming that by this procedure he could apply medicaments which would cause the cure of various pulmonary and laryngeal lesions, which the same vastly more accurate manœuvres, guided by the laryngoscope, are to-day unable to accomplish. His pathology, resting on the half comprehended ideas of Louis, was so erroneous and crude as to secure no support from his more scientific colleagues.

Very frequently a new triumph of dexterity or invention in any department of surgery leads to the erroneous assumption that because a difficulty of technique has been overcome, a new era in surgical therapy has been inaugurated.

As early as 1818 Bretonneau* had carried a probang over the aryteno-epiglottic ligaments and expressed fluids from the sponge at this point, but Trousseau denied that the interior of the larynx was reached by him.

Trousseau and Belloc in their great work, published in French first in 1837 and translated into English in 1841, described a method of making applications to the larynx which leaves us also in considerable doubt if they ever really succeeded in placing any medicament in the larynx itself. Their own doubts as to this are emphasized in the scepticism which Trousseau later evinced towards the assertions of Green, who, however, was finally acknowledged by him to have succeeded in entering the larynx. Horace Green, in 1846, published his "Treatise on Diseases of the Air Passages, Comprising an Inquiry into the History, Pathology, Causes and Treatment of Those Affections of the Throat Called Bronchitis, Chronic Laryngitis, Clergyman's Sore Throat, Etc." In 1840 he had

* "Traité de la Diphtherie."

reported a number of cases of laryngeal and bronchial disease to the New York Medical and Surgical Society as cured by intralaryngeal applications. His statements, while finding some support, were received with incredulity by a large number of his hearers. It was thought and persistently argued that it was impossible in practice to introduce instruments into the larynx. He had made his first successful attempt in 1838, a year after the publication of Trousseau and Belloc's work in France. He was subsequently charged with having derived his ideas from this book and having failed to acknowledge it. His favorite, almost his sole, local application was a 40—80 grains to the ounce solution of nitrate of silver. His laryngeal applicators had practically the same curves as those now in use. A number of prominent medical men testified to the accuracy of his statements as to the practicability of intralaryngeal applications. Immediately the book met with the bitterest reception on the part of the medical press.*

It would be profitless to follow the history of all the bitter controversy of the time. He was attacked with savage malignity, but vulnerable as were many of his other ideas, he nevertheless succeeded finally in proving that he could enter the larynx with his applicator. In this claim he was firmly supported, in the end, by the leaders of the profession in New York, and although even as late as 1855 Erichsen† in London, while admitting that the probang might be carried to the vocal cords, decided that it could not be introduced further.‡ Nevertheless in the course of the bitter contest Dr. Green was compelled to resign from one of the medical societies in New York and was even threatened with expulsion from the Academy of Medicine. The matter was fully discussed there in 1855, and an unfavorable report was made by a committee appointed to investigate his assertions. This was, however, laid on the table. He finally fully established his claims to be able to enter the larynx, but he did not succeed in proving the further claim of his ability to inject medication into the bronchial tubes and tubercular cavities of the lungs. Green eventually somewhat receded from this position, saying that he could inject it below the

* Something of this may be found in the "Boston Medical and Surgical Journal," Dec. 16, 1846—et seq.

† "Lancet," Nov. 24, Dec. 1, 1855.

‡ "Bull. de l'Acad. de Medicine," 1858, Vol. 24, p. 101. Trousseau admitted that "to Horace Green belongs the honor of having methodically and systematically treated diphtheria when it occupies the larynx, by caustics introduced by the means of a little sponge. A little later Loiseau carried solutions of tannin, etc., into the larynx."

trachea. He grossly exaggerated the efficacy of these topical applications, saying that he had produced thereby astonishingly ameliorating effects with his nitrate of silver.

Doubtless in many cases he was self-deceived by a faulty diagnosis and by his superficial knowledge of pathological anatomy. There is, however, no doubt that he greatly benefitted many cases of simple chronic catarrhal inflammations of the pharynx and larynx, and his success in obtaining a large clientèle doubtless had something to do with the jealousy of his confreres.*

THE LARYNGOSCOPE.

We have now passed in review events of interest to us in the first half of the wonderful century just completed. Before we proceed further and enter directly upon that era in which laryngoscopy created a new field for scientific endeavor and observation, let us not forget the advance in that intellectual evolution, that most important and all-pervading element in the history of civilization, which the Germans, after their wont, have rolled together in one word and called the "Zeit-Geist." After the French Revolution there was hardly an obstacle in the world to the advance of science—none except the bigoted but almost impotent sentiment of the Church. The fagot, the rack and the boot, prison and exile, had long since passed away from the horizon of possibilities in the personal prospect of the man of Science. From the burning of Bruno and the degradation of Galileo to Wilberforce's undignified and maladroit taunt against the Darwinians at Oxford, a period of scarcely two hundred and fifty years had elapsed. It needed not Huxley's cutting rejoinder to remind the world that ecclesiasticism was no longer an efficient engine of intellectual tyranny.

The century had hardly opened when we find the idea existent that it might be possible, by means of a mirror to see into the larynx†. Bozzini seems to have drawn on himself an undeserved amount of criticism by the publication in 1807 of a brochure‡, describing a

The Laryngoscope of Bozzini.

* For a list of the works of Horace Green see his obituary notice in "The New York Medical Journal," Jan., 1867, p. 316

† In McKenzie's early account of the history of the laryngoscope he committed the error of referring to Celsus as having been familiar with the use of dentists' mirrors. He evidently mistook the word *specillum*, meaning a probe, in "De Medincina," VII, c. XII for *speculum*, meaning a mirror. He was also wrong in supposing that Levret, in the eighteenth century, had any glimmer of the possibilities of the idea of laryngoscopy in recommending a polished steel tongue depressor in examining the pharynx.

Vid.: "Observations sur la Cure Radicale de Plusieurs Polypes de la Matrice, de la Gorge, et du nez," 1749.

‡ "Der Lichtleiter oder Beschreibung einer einfachen Vorrichtung und ihrer Anwendung zur Erleuchtung innerer Höhlen und Zwischenräume des lebenden animalischen Körpers," von Philip Bozzini, "der Medizin und Chirurgie Doctor," Weimar, 1807.

I am indebted to other sources, chiefly Morrell McKenzie's works, for an account of this brochure.

double canula with a mirror placed at an angle at the end, which was supposed to transmit light through one compartment, and reflect it from the mirror on to the parts examined, whose image, received on the mirror, was reflected back to the eye through the other compartment. It was supposed, singular to say, that the light passing in would interfere with the perception of the reflected image if one tube was used. A wax candle with a reflector behind it supplied the illumination. This instrument was used successfully. With it and others, Bozzini claimed to be able to inspect the various canals of the body, among them, the larynx. Of course this contrivance was too imperfect to attract any attention to the idea, but the invention of Babbington, and that of Cagniard de la Tour, were practically the present instrument. Exhibited before scientific bodies it is singular, but instructive, that these should not have attracted the notice which thirty years later was given to Garcia's invention.

Babbington In 1829 Benjamin Babington presented to the Hunterian Society* "an oblong piece of looking glass, set in silver wire, with a long shank. The reflecting portion was to be held against the palate, whilst the tongue was held down by a spatula." The doctor proposed to call this contrivance a glottoscope†.

Cagniard de la Tour. Fournié says* that 1825, M. Cagniard de la Tour introduced into the back part of his own throat a little mirror, hoping that by the aid of the solar rays and of a second mirror he could see the epiglottis and even the glottis, but he was only partly successful.

Senn. There is still another record of this date, which is interesting in connection with the foregoing as illustrating how the idea was hovering in the air long before Garcia. Senn§ in 1827 tried to use a small mirror in the pharynx to see the parts below. He used no illumination and supposed his failure was due to the small size of the mirror. Again we find a great London surgeon, who appreciated some of the possibilities of such an instrument in 1837.

Liston. Liston|| declared: "The existence of this swelling (of the larynx-

* "London Medical Gazette," III, 1829, p. 555.

† According to McKenzie, Babbington's patient sat with his back to the sun, the rays of which were reflected into his throat by an ordinary hand mirror. In McKenzie's book, "The Use of the Laryngoscope," 1865, p. 14, the laryngeal mirror of Babbington is illustrated, but in the original notice here cited, there is no reference to the method of illumination, except that a strong light is necessary.

‡ "Physiologie de la Voix," p. 352—quoting from the "Journal de la Institut" No 225 1825.

§ "Journ. des Progrès," 1829, p. 231. Note—quoted by McKenzie 1, c.

|| "Practical Surgery," 1837, p. 350, by Robert Liston.

geal mucosa) can often be ascertained * * * by means of a speculum; by such a glass as is used by dentists, on a long stalk, previously dipped in hot water, introduced with its reflecting surface downwards and carried well back into the fauces, a view may often be had of the parts."

Baumes in 1838 * exhibited at the Medical Society of Lyons a mirror the size of a two franc piece, which he described as being very useful for examining the posterior nares and larynx. Baumès.

Much more earnest but scarcely so successful were the efforts of Trousseau and Belloc to see the parts *intra vitam*, with which their work on laryngeal phthisis in 1837 was concerned. I may quote, directly from them, their own experience and that of others I have not thus far mentioned.

"For several years we have been occupied with the construction of a speculum laryngis. The one of M. Selligie is known. He is a very ingenious mechanic, who affected himself with laryngeal phthisis, from which he had entirely recovered, made for his physician a speculum with two tubes, of which one served to carry the light to the glottis, and the other served to carry back to the eye the image of the glottis reflected in a mirror placed at the guttural extremity of the instrument. * * * The use of this is very difficult, and there is only about one patient in ten who can bear its introduction. Indeed it is of a volume which occupies the space comprised between the free border of the velum palatæ and the superior surface of the tongue." A similar instrument, the description of which we may note corresponds with that of Bozzini, was made for them, but so unsuccessful were they with it they denied it was possible for Bennati † to see the glottis with the instrument of Selligie. "He might have seen the epiglottis or the superior opening of the larynx, but as for the glottis, it is situated at such a depth and in such a manner that it is impossible to see it with the speculum even in the cadaver, while the irritation of the pharynx in the live subject renders it still more inaccessible, even in those who are most accustomed to it." This emphatic expression of a negative opinion as to the performances of others, was characteristic of the man who later in life, at first obstinately refused credence to the practicability of Green's topical applications, and Bouchut's intubation of the larynx. Selligie.

* *Compte Rendu des Travaux de la Société de Médecine de Lyons*, 1836-1838, p. 62.

† Bennati, in a footnote to the 3d edition of his "*Recherches sur la Voix Humaine*," describes the instrument here referred to.

Worden.

Adam Worden* suggested the use of refracting prisms to carry the light and the line of vision to parts within the larynx, the ear and the vagina, through variously devised canulæ. He claimed that in one case he was able to see the pathological condition of the larynx.†

Avery.

This idea later also occurred to Ephraim Cutter in America,‡ about the time laryngoscopy became elsewhere an accomplished fact. McKenzie (l. c. p. 22) gives a full description and an illustration of the laryngoscope of Avery invented in London in 1844. A small lamp attached to a head piece was worn on the forehead with a reflector behind it. A speculum similar to Bozzini's, except with a single tube, was used to hold the reflecting mirror.

The collection of these notes seems to make a respectable præ-laryngoscopic history of the laryngoscope. How completely the idea, dwelling in the minds of men, had failed to take root, is to be noted in the remark of Friedrich, I have quoted, regarding the impracticability of extending to the larynx any method of physical examination.

Manuel
Garcia.

These are the brief words with which Manuel Garcia in 1855 explained his device for examining the larynx: "The pages which follow are intended to describe some observations made on the interior of the larynx, during the act of singing. The method which I have adopted is very simple. It consists in placing a little mirror, fixed on a long handle suitably bent, in the throat of the person experimented on, against the soft palate and uvula. The party ought to turn himself towards the sun, so that the luminous rays, falling on the little mirror, may be reflected on the larynx. If the observer experiment on himself he ought by means of a second mirror to receive the rays of the sun and direct them on the mirror which is placed against the uvula.§

Garcia was entirely unaware of the previous attempts to accomplish his purpose with devices, some of which were identical with his own. His invention, great in utility as it was in the hands of medical men, was merely an incidental contrivance in those of the earnest teacher of singing, who desired to see the apparatus which produced the sounds he was endeavoring to train into harmony, and the remainder of his communication is largely devoted to the con-

* "London Medical Gazette," Vol. II, 1844, p. 256.

† "Monthly Journal of Medical Sciences," 1845, p. 552.

‡ A contribution to the History of Laryngoscopy by Louis Elsberg, M.D. "Archives of Laryngology," 1883, Vol. IV, p. 122.

§ Observations on the Human Voice, by Manuel Garcia, Esq. Received March 22, 1855; Proceedings of the Royal Society of London, 1855, p. 399.

clusions he drew from what he saw in his own throat of the various laryngeal movements during the act of musical phonation. The announcement, therefore, was chiefly a demonstration of auto-laryngoscopy.

The crux of the difficulties which had hitherto prevented the utilization of this device which had, as we have seen, been so many times proposed, is evidenced in the notice of Garcia's communication which appeared in Paris.* "M. Garcia has the faculty of supporting in the pharynx and at the isthmus of the fauces the prolonged contact of foreign bodies without provoking in him efforts at vomiting." Commenting on this the editor said: "As for the ingenious procedure by which he was able to see the glottis in function, I hope indeed soon to be in a position to repeat it myself." This latter remark is an early hint as to the interest aroused by the announcement that it was possible to see a puzzling, interesting, familiar, but hitherto invisible physiological phenomenon, but it bore no trace of any thought as to the vast possibilities in the way of studying pathological phenomena.

Difficulties of
Technique.

It is thus that Ludwig Türck relates† how his attention was directed in Vienna to the matter in 1857: "Half through accident, without knowing of my predecessors, I came to the idea of using a small mirror for the investigation of laryngeal disease. First, as I was showing Professor Ludwig the internal laryngeal structures of a patient in my hospital division, I learned of Garcia's investigations." From that it would appear that Türck had himself invented an instrument before he knew of Garcia's. Others declare that Garcia's communication was in his hands before he came upon the idea. However this may have been, certain it is that Türck had worked at the problem before Czermak took it up. The latter, however, preceded him in the public announcement of his studies.

Ludwig
Türck.

In March, 1858, there appeared a publication‡ upon the laryngeal mirror in one of the Vienna medical papers. It was by Professor Czermak, who said that Türck some time previously had been attempting to use some of Garcia's instruments. Czermak borrowed some mirrors of Türck for the same purpose, and his paper consisted only of some remarks on his experience, but he

Johann
Czermak.

* M. Segond: "Gazette Hebdomaire de Medicine et de Chirurgie," Nov. 16, 1855. No. 46, p. 816.

† "Klinik der Krankheiten des Kehlkopfes," 1866.

‡ Ueber den Kehlkopfspiegel, von Prof. Joh. Czermak: "Wiener Med. Wochenschrift," No. 13, p. 196, March 27, 1858.

urged all physicians to make a trial of them. He said that Türk and Garcia used sunlight, but he made use of lamplight and advised the employment of a "large perforated concave mirror for reflecting either the sun or artificial light." Subsequently he very correctly asserted* that but for this invention of the reflecting mirror, laryngoscopy would have been "a dead born child." He urged in his first communication that by persistent practice difficulties in the technique may be overcome. Czermak's first device for fixing the head mirror seems to have been to hold the frame of the mirror between the teeth, Semeleder adapting it to a spectacle frame. (1858). Whatever may have preceded this, it is evident on a perusal of the literature of the subject at this period what an impulse Czermak's brief notice gave the whole matter. It aroused the languid interest of others, and soon excited the active resentment of Türk. Less than two weeks after this first communication in a medical journal, Czermak gave a public demonstration of the use of the laryngoscope†. At this meeting Türk was present and claimed priority as the first to employ it for diagnostic purposes‡. This Czermak admitted.

Soon followed Türk's own publications§. Jealousy and strife soon began between the two men, and the history of it is an undignified record, the relation of which would serve no good purpose but to exhibit the folly of it and the harm such incidents do to the posthumous fame of otherwise distinguished men||.

Czermak soon opened up another region in the throat to examination. He turned his mirrors upward and demonstrated the pharyngo-nasal cavity, in Buda-Pesth, July 29, 1859¶. Very shortly after this, Voltolini took the matter up** and still further developed the technique, abandoning the palate retractor used by Czermak. The latter in his early attempts at post-rhinoscopy had also attempted the use of double mirrors, one placed at an angle above the other to show the choanæ. Czermak also introduced a

Controversy of
Türk and
Czermak.

Rhino-Pharyn-
goscöpy.

* "Der Kehlkopfspiegel," 2d Edit., 1863.

† "Zeitschrift der Gesellschaft der Aertzte," No. 17, April 26, 1858. Sectionsberricht Sect. I. Physiologie und Pathologie, p. 271.

‡ See also: A. O. Beilage zu, No. 16, "der Wiener Medizin. Wochenschrift," April 17, 1858.

§ "Zeitschrift der K. K. Gesell. der Aertzte zu Wien," No. 26, June 28, 1858, p. 461.

|| Lists of the numerous contributions of Türk and Czermak to the literature of the subject may be found appended to their later more voluminous works.

¶ "Der Kehlkopfspiegel," etc., 1860, von Joh. Czermak, also: "Deutsche Klinik," No. 21, P. 202, 1860. "Die Besichtigung der Tuba Eustachii," etc.

** "Virchow's Archiv," No. 21, p. 48, 1861.

mirror through a tracheal opening and demonstrated the under surface of the vocal cords. The mirrors at first and for long afterward varied in shape and size, many having bent handles. There were many subsidiary devices which complicated, but did not improve the technique, and early in the history of laryngoscopy we may note the old idea of Aranzi by which sunlight was admitted through a hole in a shutter of a dark room and allowed to fall, either directly or through a water bottle, into the nostrils or mouth of a patient. This was rendered more efficient by the use of a deflecting or reflecting mirror*.

Voltolini† invented an apparatus for the manufacturing and burning of oxygen gas to be used in an incandescent light for examining the ear and larynx with Garcia's instrument.

By the profession in general, the new instrument at first was looked upon with some scorn as a physiological plaything, and the dispute as to the priority of its use may perhaps have had some beneficial effect in attracting an attention which its merits could not have effected. Türk and Czermak carried their ideas and their warfare into France. Having both published separate brochures in German on the use of the laryngoscope, Czermak in 1859, and Türk in 1860, they republished these immediately in French, and both went to Paris, where they gave public exhibitions and lessons in the new art. A commission of the Academy of Sciences of the Imperial Institute of France was appointed to investigate their rival claims. This did not choose to go into the question of priority, but accorded them both honorable mention (March 21, 1861) for the services they had rendered science in the introduction of the laryngoscope. The committee suggested that 1,200 francs for each be added to this honor.

Türk and
Czermak in
France.

While Czermak had remarked upon some pathological conditions, he attributed the first studies in this field to his pupil, Semeleder, who in 1858, published‡ an account of some pathological conditions of the epiglottis and of the tongue. Störk, Türk and Gerhardt, in the same year and the next began their numerous contributions to the literature of intra-laryngeal pathology. In this Türk was especially prolific.§ All these earlier works of Türk

Clinical Use of
Laryngo-
scopy.

* See among others Störk, "Zeitsch. der K. K. Gesell. der Aertzte zu Wien," No. 46, p. 721, 1859.

† "Virchow's Archiv," No. 17, 1859, p. 193.

‡ "Zeitsch. der K. Gesell. der Aertzte zu Wien," No. 28, July, 1858.

§ His contributions and those of others are to be found chiefly in the "Zeitsch. der K. K. Gesell. der Aertzte zu Wien." and the "Allgemeine Medizin Zeitung" during 1859 and 1860. His brochure, "Praktische Anleitung zur Laryngoscopie," 1860, is largely a reprint of these papers together with a historical and polemical dissertation on the subject of Laryngoscopy.

were in some form soon translated into French and English. Whatever may have been his merit as to the inception of the idea of laryngoscopy, he was foremost in the spread of the knowledge of disease revealed by it.

Intra-laryn-
geal
Applications.

For the most part his idea of pathology, especially pertaining to tuberculosis, conformed to the principles of Rokitsanski. He described the appearances in lupus, diphtheria, syphilis, tumors and œdema of the larynx. Störk, in 1859, in an article on the technique of laryngoscopy spoke of making laryngeal applications of nitrate of silver with the aid of the laryngoscope. Thus early was the question which agitated Horace Green and his adversaries conclusively settled without controversy. Czermak also claimed to have made applications of caustics and other drugs to the larynx under the guidance of the laryngoscope as early as 1859.

The Spread of
Laryngo-
scopy.

The use of the laryngoscope quickly spread in the large cities of other lands. In London P. C. Price, apparently unacquainted with Garcia's communication to the Royal Society four years previously published* an account of a steel mirror which was to be used in examining the back part of the tongue and the epiglottis. In the *Medical Times and Gazette*, August 4, 1860, there is a short editorial note mentioning the investigations of Türck and Czermak, and stating inaccurately that the mirrors used were similar to those invented ten years before by Mr. Avery.

Morrell McKenzie had visited Czermak in 1859, and was in Vienna during the controversy between Czermak and Türck. On his return to London in 1860, in company with Gibbs, Prosser, James and others, he was foremost in the use of the laryngoscope and the study of the phenomena which it revealed, and in 1863 he obtained the Jackson prize of the Royal College of Surgeons for his essay on "The Pathology and Treatment of Laryngeal Disease," his brochure on "The Use of the Laryngoscope in Diseases of the Throat with an Appendix on Rhinoscopy" appearing in 1865.

Windsor† gave an account of the history of the laryngoscope and pointed out the promise of its future. C. Racuhfuss‡ introduced into Russia the knowledge of laryngoscopy and intra-laryngeal operations.

Czermak and Türck, as we have seen, published their first books in France in 1859 and 1860. In 1861 Moura had advanced far enough in the new art to publish a treatise on laryngoscopy, a second edition appearing in 1865. Czermak besides his stay in Paris

* "The Lancet," December 24, 1859.

† "British and Foreign Medico Chirurgical Review," 1863, Jan., p. 209.

‡ "Zur Laryngoskopischen Technik, St. Petersburg Med. Zeitsch.," No. 1, p. 22, 1861.

also visited London, as did Türck. The former also visited many cities in Germany, and Tobold, in Berlin, in 1863 published his "Anleitung zur Laryngoskopie," in which he adopted the principle of fixing the reflecting mirror to a stand which was eventually modified into the present so-called Tobold's apparatus. The original idea of this, however, is to be found in Türck's papers.

Votolini* contributed much, by the originality of his diction and the fertility of his inventive powers, to the spread and advance of the art in Germany especially as to naso-pharyngoscopy and the employment of the galvano-cautery. Post Rhinoscopy was at first eagerly pursued by Voltolini and Semeleder as an aid to the passage of the Eustachian catheter.

We have recited the attempt of Ephraim Cutter in America to utilize prisms in laryngoscopy. He and his predecessor in England, Warden, were alike unsuccessful in turning to account the principles of refraction, but his letters published by Elsberg are significant of how well extended was the idea of the practicability of laryngoscopy at the time Garcia demonstrated it.

Strangenwald¹, Church², Krackowitzer³ and John H Douglas⁴ and Horace Green in 1861 reported the new art in America.

Louis Elsberg, to whose exhaustive work† I am indebted for much of my information as to early laryngological literature in America, in 1862‡ and 1863§, published papers on the laryngoscope and laryngoscopic technique. The latter more than anyone else was active in drawing attention in America to the value of the new art, and for some time previous to these publications he had taught the technique in the University Medical College in New York City. His attention had been attracted and his ardor stimulated by Czermak, who had sent him his book. These studies and observations he brought, in 1863, before the New York Academy of Medicine and the American Medical Association. He also thus early urged the value of topical applications to the larynx. Horace Green lived to see an instrument of precision prove, before the Academy of Medicine, the claims which he had advanced there so courageously and so tenaciously many years before, but he himself took no active part in developing in his native country the art of laryngoscopy. He died in 1866.

* "Die Laryngoskopie und Pharyngoskopie," 1861.

1 "American Med. Monthly and New York Review," Vol. XIV, July, 1860, p. 15.

2 "Bulletin of the Academy of Medicine," Vol. I, 156.

3 Ibid., p. 162.

4 Ibid.

† "Trans. Am. Lar. Ass'n," Vol. I, 1879.

‡ "Am. Medical Monthly," 1862, Vol. XVIII, p. 386.

§ "Am. Medical Times," May 9, 1863, Dec. 26, 1863.

It was several years after Elsberg became active in the propagation of laryngology in America that others joined him.

In 1866 J. Solis Cohen, of Philadelphia, began* that long series of communications which have done so much to establish the specialty of laryngology in America and to stimulate its steady advance for nearly forty years.

Laryngological
Clinics
and Instruction.

In the Medical Schools and Universities instruction was soon given in the art of laryngoscopy. Türck and Semeleder are recorded as giving instruction in Vienna in 1861, the former being created professor in 1864. In other large cities, as well† as in Vienna, private and public instruction was soon to be easily obtained by the student. In 1861 Elsberg had begun teaching laryngoscopy in New York, and in 1868 in the catalogue of the "Medical Department of New York" his name appears as Professor of Diseases of the Throat, but not until 1875 was laryngology included in the curriculum of the Harvard Medical School, and that of the New York College of Physicians and Surgeons. After this it soon became a department of nearly all the teaching medical institutions. In the dispensaries and hospitals of New York City, special clinics were formed about the same time. The throat department of the New York Eye and Ear Infirmary was separated from the Aural Department in 1873. In 1875 a department for Diseases of the Throat was opened at the New York Dispensary.

Laryngological
Literature.

The new specialty of laryngology found place for its publications at first exclusively in the general medical literature of the day, but especially in the otological journals. "The Archiv. fur Ohrenheilkunde," founded in 1864 in Vienna, and especially in the "Monatsschrift fur Ohrenheilkunde," founded by Voltolini in 1866, in Berlin. The "Annales des Maladies de l'oreille, du larynx, etc.," began its issue in 1874 in France. "The American Archives of Laryngology" began its short-lived career in 1880. "The Italian Archivii" in 1881, the Spanish "Revista de Laryngologia, etc.," in 1887, while the English "Journal of Laryngology" did not issue its first number until 1887. In 1884 Semon began his comprehensive index of laryngological literature, the "Centralblatt fur Laryngologie," while it was not until 1893 Frankel began his stately Archiv, which has done so much in the last few years to supply us with the best thought of the workers in our own special field.

* Vid. "New York Med. Record," 1866. "Am. Jour. Med. Sciences," April-Oct. 1867.

† I regret very much that more exact and accurate information is not at my disposal of the beginnings of laryngological instruction in various capitals of the civilized world.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Stated Meeting, March 26, 1902.

Emil Mayer, M. D., Chairman.

A Shoe Plate in the Rhino-Pharynx.

Dr. Charles Mack presented a shoemaker who had come to him about 2. p. m. with a history of having swallowed a shoe-plate at 9 a. m. of the same day. The plate was found to be in the rhino-pharynx on the same side. The foreign body measured $1\frac{5}{8}$ inches by $\frac{1}{2}$ inch, and had three spike-like projections, measuring nearly half an inch in length. The plate was almost completely covered with mucous membrane. After thorough cocaineization a canulated laryngeal forceps was used to grasp the object, but even with the exercise of considerable force the plate could not be removed until with the finger the mucous membrane had been stripped from off the spike-like projections.

A New Instrument.

Dr. J. Abraham exhibited a new instrument intended for removing posterior hypertrophies of the inferior turbinate. The instrument appeared to be simple and practical. He had just received it from Dr. Lake, of London, and had had no personal experience with it as yet.

Tumor of the Larynx Presented for Diagnosis.

Dr. T. R. Chambers presented a healthy girl of twenty-two, who, five months ago, had come from Finland. She had had a slight hacking cough for several months prior to coming under observation, and was well nourished, though there was slight impairment of the voice. Examination showed a lobulated tumor on the epiglottis wholly obstructing the view. After the use of a spray of adrenalin the tumor shrunk sufficiently to allow of a view of the arytenoids. This was one month ago, and since then the patient had been on specific medication. As there had been very slight

contraction he would favor a continuance of the specific treatment for three or four weeks more, though he did not think the growth was syphilitic. The case was presented for diagnosis.

A Case of *Oidium Albicans* in the Adult.

Dr. Gage presented a patient who gave a history of alcoholic gastritis and of a white exudation persisting in the mouth and throat, and spreading down to the epiglottis. The case was presented for diagnosis, as the infiltration seemed to be too extensive for thrush. The application of iodine and alcohol had cleared up the condition somewhat.

A Case of Frontal Sinus Disease.

Dr. W. N. Hubbard presented a case of frontal sinus disease occurring in a woman. Irrigation had relieved her of headache and most of the discharge for a time, but the trouble having recurred, the patient was etherized and operated upon. With Dr. Coffin's trephine pus was detected on the right side, and the sinus was thoroughly curetted. The probe detected bare bone around the ethmoid, but an exploratory opening on the other side was negative, and it was accordingly closed by suture. On the right side there was no pus for seven or eight days, so that he almost regretted not having closed it up immediately. After this interval suppuration began and the packing and dressings were renewed daily. The opening was allowed to close at the end of six weeks, and the patient was entirely free from symptoms. The case was presented to show the effect of simple eyebrow incision without drainage into the nose. This procedure seemed to him a rational one, because the object was to secure a filling up of the cavity with granulations.

A Case of *Naevus* of the Tonsil.

Dr. D. Bryson Delavan reported this case. The patient was an old man of seventy, at present an inmate of St. Luke's Hospital. A large, purplish mass occupied what would be the right side of the pharynx. It was composed of large veins. There was no semblance of ordinary tonsillar tissue left. The man stated that he had had this condition, so far as he knew, all his life, and the only trouble experienced was that occasionally the veins would become distended with blood, and if he lay on the left side, respiration would become obstructed. The man also had a small nevus on the right side of the upper lip. The speaker said he believed this condition to be exceedingly rare.

Dr. J. E. Newcomb said regarding Dr. Chambers' case, that he agreed with Dr. Chambers, that the case was apparently neither syphilitic nor tubercular. If syphilitic, one would expect more ulceration on the surface. When touched with a probe it seemed to be almost fibrous. He had been reminded by this case of a similar growth reported by Dr. Farlow to the American Laryngological Association, which proved to be a lipoma.

Dr. Beaman Douglass suggested the possibility of this being a congenital condition. It certainly did not seem to be malignant, syphilitic or tubercular, and if benign it must belong to the myxomatous or fibrous group. A microscopical examination alone could establish a proper diagnosis.

Dr. M. D. Lederman said that the growth, when examined macroscopically, looked like a fibroma, and he understood from Dr. Chambers that there had been recently some proliferation of tissue. The mucous membrane over the arytenoid region appeared to be hypertrophied, but no ulcerative areas were visible.

Dr. Emil Mayer said that the only proper way of settling the diagnosis was by taking a section and examining it. It might be a lipoma, a pure chondritis or possibly lupus. Lupus of the larynx certainly appeared quite as benign as this.

Dr. Lewis A. Coffin remarked that the trephine used in Dr. Hubbard's case was an instrument measuring about one centimeter in diameter. He had devised it for the purpose of cutting out any portion of a circle and making a bone flap.

Dr. C. G. Coakley did not think it was necessary to pack the wound as often as had been done in Dr. Hubbard's case; it often could be left for three or four days, and by allowing the granulations to remain undisturbed for this length of time their growth would be better. Of course, if there were pain or elevation of temperature the packing should be removed sooner.

Dr. Thomas J. Harris said that almost a dozen operations had been devised for the treatment of frontal sinus disease, and yet perfection had not been reached. One class of cases would heal very readily, while another class, in which there were large recesses and the diseased mucous membrane could not all be removed, proved most intractable under all methods of treatment. He had worked most faithfully on one case for over a year, and although the frontal headache had gone, the discharge still persisted despite the fact that there was perfect drainage through the nose. Possi-

bly it might have sealed up more quickly if a barrier to infection through the nose had been maintained. If the nose were fairly normal, and there was little or no involvement of the ethmoidal cells, he would, in the future, avoid securing drainage through the nose, and would treat the case on the plan pursued in the one under consideration.

Dr. Francis J. Quinlan said that a few years ago he had shown that the nose was a source of renewed infection. If every portion of necrotic tissue were removed and the cavity were gently but firmly packed against rubber tissue, the results would be much better. He had treated quite a large number of these cases, and did not hesitate to make a large opening into the frontal sinus in order to remove all diseased tissue. There was usually very little depression and deformity, and if there should be it could be obliterated by the subcutaneous injection of paraffin.

Dr. T. R. Chambers said regarding Dr. Delavan's case, that about three years ago he had presented to this section a case like the one just described by Dr. Delavan. The patient was a boy of sixteen years, and the left tonsil was the one affected.

Ichthargan and Its Use in Nose and Throat Affections.

Dr. Beaman Douglas read this paper. He said that this combination of ichthyol and silver had been sent to him from Hamburg for testing. It is a brown, amorphous powder, odorless and stable. The aqueous solution becomes gradually darker when exposed to light, but undergoes no change if kept in dark yellow bottles. This compound contains 30 per cent of silver and 15 per cent of sulphur. It was, therefore, the strongest of the silver compounds. Experiments had proved conclusively that it had a much greater penetrating power than silver nitrate, and that the other silver salts were much more toxic. When administered by the mouth or subcutaneously it is said not to cause any dangerous effects. In nose and throat work it should be used ordinarily in the strength of one in twenty, dissolved in water or glycerine. When applied as a powder it causes burning and sneezing. Watery solutions of a strength of 0.1 to 0.3 per cent, seemed to have no other effect than to increase the secretion from the nose. In 10 per cent solution it causes a disagreeable taste and nasal irritation. There was found to be no excessive reaction from the use of a 4 per cent solution. When applied to a congested area there was some anemia produced and apparently a very slight anesthesia.

The latter was of no practical value, and probably resulted from the anemia. The antiseptic action of the drug was seen in cases of atrophic rhinitis. As an antiphlogistic its effect in the nose was quite marked. When ichthargan was used for some time a tolerance was established, and this was followed by improvement in the nasal circulation. The drug acted as a stimulant and alterative. Compared with silver nitrate it was about one-tenth as irritating, but even in concentrated form it never cauterizes. It should be found useful in cases of acute catarrhal rhinitis, and in some cases of hypertrophic rhinitis. In acute rhinitis it was useful when applied either as an ointment or solution. In acute catarrhal laryngitis in the adult it would be found beneficial when used in from 4 to 8 per cent solution sprayed upon the parts. The best results were obtained in atrophic rhinitis.

A Histological Study of the Proliferation and Phagocytosis of the Fauical Tonsils.

Dr. J. L. Goodale, of Boston, Mass., was the author of this paper.

He said that there were two kinds of phagocytic cells found in the tonsillar ring, namely, first, polynuclear neutrophilic cells, and second, large mononuclear cells, resembling morphologically epithelial cells. The former are found chiefly in the crypts and in the blood vessels, the latter in the reticulum of the follicles. The framework of each follicle is composed of a ring or capsule, composed of four or six layers of connective tissue, separated by lymphoid cells. In the normal human tonsil one or more of the epithelioid phagocytes were found in each follicle. The phagocytes incorporated and digested lymphoid cells and cellular detritus, but apparently did not attack polynuclear leucocytes or endothelial cells. In the mucous membranes of the crypts numerous plasma cells, lymphoid cells and polynuclear neutrophiles occur. Lymphoid tissue from other positions of the tonsillar ring was examined, and found to contain endothelial phagocytic cells, but these were less numerous than in the faucial tonsils.

Tonsils were examined from the opossum, cat, sheep, cow and pig. The essential features in all these animals were the same. In the pig, the fibrous tissue of the reticulum and capsule of the follicles was the most marked, while in the cow it was the least marked. In the tonsils of the cat, eosinophilic polynuclear cells near the case of the organ were extremely numerous. In simple hyperplasia, the most conspicuous alteration was a great increase

in the number of endothelial cells. The lymphoid ring was proportionately not increased. The endothelial phagocytes were most numerous near the centre of the reticulum of each follicle. The lining endothelium of the capillaries and blood vessels showed no unusual proliferation, a feature which serves to distinguish the condition from acute inflammation. In atrophied tonsils, the follicles were markedly diminished in number, those situated near the crypts were the largest, and showed a greater proliferation of the endothelium than those at a distance. In acute infectious tonsillitis, the centre of the follicle appeared enlarged from increased proliferation of the endothelial cells and of the lymphoid cells. A proliferation of the endothelial cells, of the capillaries and of the smaller blood vessels, was quite generally noted. In sections of the tonsils in which chronic acid had been deposited in the crypts, there was an area of necrosis of the tissue in the immediate vicinity. Beneath this there was a markedly increased proliferation of the endothelial cells of the reticulum with a formation of mononuclear endothelial phagocytes.

Dr. Beaman Douglass said that a paper of this kind, representing as it did much laborious scientific research, did not admit of discussion by the Section, but he wished to compliment the author on the results obtained, and upon the beauty of the photomicrographs presented. He noted that the bacteria had not been found very much within the tonsillar tissue. The bacteria were found on the surface of the tonsil, and near the crypts. This suggested that the hyperplastic inflammation of the tonsil was the result not so much of bacterial infection and irritation as of an irritation due to other causes. Whether these causes were climatic, thermal or chemical it was impossible to state at the present time. The speaker said that a few years ago he had studied a number of tonsils and adenoids, and had found that bacteria were rarely found in the interstitial tissue. From this he had drawn the same conclusion as that presented by Dr. Goodale.

Dr. H. L. Swain, of New Haven, said that eighteen years ago he had spent a considerable time in the study of the histology of the lingual and other tonsils and had consequently very greatly enjoyed the paper by Dr. Goodale.

The present methods made the older seem very primitive. Especially beautifully had the photograph which was passed around shown the existence in the tonsil proper of the endothelial

phagocytes, whose evident duty was to cure of such infecting and deleterious matter as escaped the leucocytes. In studying tonsil tissue, microscopically, one is constantly confronted with the fact that in the chronically inflamed structures the epithelium is bored through in many directions by the emigrating leucocytes, and it is satisfactory to know that if these same wandering cells are not on guard all the time, cells do exist within the tonsil which are rapaciously active in destroying invading matter. The whole ring of lymphoid tissue in the upper air tract should be viewed as lymph nodes. Other lymph nodes are noted for the fact that they harbor tubercle bacilli and that would lead one to expect that there would frequently be such bacilli present in tonsillar tissues. Dr. Wright, of this Section, and others have examined very large numbers of specimens and very rarely indeed, are such bacilli found in them. Evidently the activity of these same cells which the writer of the paper so clearly demonstrated, must be responsible for the absence of these invading organisms. Ought we not to consider this fact and avoid interfering with these normal structures unless thoroughly convinced of the necessity of surgical measures?

Personally, he felt that the pharynx tonsil was the more dangerous as regards infection of the general system on account of its broad, flat, not sharply-defined contour, than were the faucial tonsils, which had well-defined capsules and was thoroughly isolated in between the pillars of the palate.

Dr. Goodale said that in the infectious diseases one sees an enlargement of the tonsil, and it was reasonable to assume that this was due to the toxin of the disease circulating in the system and causing a proliferation of the cells of the tonsil, just as occurs in local disease of the tonsil. In typhoid fever an enlargement of the tonsil takes place very much as occurs in Peyer's patches in the intestine. Dr. Swain spoke of the absence of a fibrous barrier in the pharynx tonsil; he would call attention to the fact that there was a limiting membrane of yellow elastic tissue in the pharynx tonsil which acts as a barrier.

A Clinical Contribution to the Study of Empyema of the Frontal Sinus.

Dr. Max Toeplitz reported this case. The history dated back four years, but the acute symptoms did not appear until last November, at which time the patient came under the author's observation. The diagnosis of empyema of the frontal sinus on the right

side was made, and an opening was established for the escape of pus by removing the middle turbinal and curetting the sinus through the nose. This promptly relieved the frontal headache, but was followed in a few hours by great swelling of the lids and exophthalmus. Dr. Thomas R. Pooley made a diagnosis of phlegmon of the orbit, and an operation from without was immediately undertaken. Numerous polypi and a large quantity of pus were evacuated; a soft rubber drainage tube was passed into the nose and the cavity was packed with gauze, and the orbital cavity searched for pus without avail. The swelling of the lower lid was, for several days after the operation, still great, but pus could not be detected at once, despite another opening of the orbital cavity from below. The abscess opened spontaneously after four days. From the exploration of the orbit made at the time of the second operation, it seemed certain that no accidental opening into the orbit had been made when doing the first curettage, and it was probable that the orbital abscess resulted from the development of a thrombo-phlebitis affecting the veins which pass through the bone into the orbital cavity. The patient made a complete recovery.

Dr. Thomas R. Pooley said that cases of frontal sinus disease in his experience were always associated with empyema of the anterior cells of the ethmoid, and in all cases that he had observed the swelling had been limited to the upper and inner corner of the eye. If the swelling passed beyond the middle of the brow he was almost certain that the outer wall of the sinus was involved. One of the two exceptions that he had seen was the case just reported. In the other exceptional case there was swelling of both upper and lower lids, and the operation was done in the manner described by Dr. Toeplitz, with the result that a large quantity of pus was evacuated from the depths of the orbit. Because of this experience he had made the diagnosis of probable abscess of the orbit. The subsequent formation of an abscess on the lower lid seemed to him entirely unique. His belief was that an external operation was always indicated whenever there was swelling in the upper and inner corner of the eye; he would even go so far as to say that if there was continued pain on pressure with frontal headaches the operation should be done. The operation which commended itself to all oculists was an incision into the floor of the sinus, and not into the anterior wall. The latter gave rise to great deformity in many instances.

CHICAGO LARYNGOLOGICAL AND CLIMATOLOGICAL SOCIETY.

Meeting held January 21, 1902.

Reported by Wm. L. Ballenger, M. D.

Dr. Wm. E. Casselberry, President, in the Chair.

Dr. Otto T. Freer read a paper entitled "The Correction of Deflections of the Nasal Septum with a Minimum of Traumatism."

In contrast with the Asch operation, the essayist described a method of operating under local anesthesia which he has employed with favorable results in fifteen cases. To produce anesthesia he uses powdered cocaine which is applied to both sides of the septum, at the point to be operated, with a delicate, cotton-wrapped applicator, which is moistened before being dipped into the powdered cocaine. In this way anesthesia of limited area is produced. An advantage of cocaine in the dry state is that it contains none of the poisonous products of decomposition liable to occur in solutions. No untoward effects have been observed as the total amount of the drug used is small. After the cocaine adrenalin, 1-1,000, was employed, whereby the operations were practically bloodless as well as painless.

Two typical forms of septal deflection are met with, viz., angular and bowed, the former of which is chiefly limited to the cartilage. The mucous membrane is separated from the cartilage so as to expose the deflected or redundant portion thereof, which is, as far as possible resected, the first step being to dissect out and remove the triangular portion which constitutes the anterior end of the deflection, whereby the mucous membrane of the concave side is exposed. After this, the remainder of the deflected cartilage is similarly removed with suitable shaped knives and when the deflection extends in the bony portion of the septum, it is next weakened with a long dental chisel or electric trephine, after which it is fractured and straightened with a Roe septum forceps. The hemorrhage is slight and all blood is removed, as fast as it appears,

with cotton swabs, so as to keep the field clear so the several steps as taken can be clearly seen.

When the operation is completed so the patient can breathe freely through either nostril, the operated naris is lightly packed with long strips of gauze impregnated with powdered subnitrate of bismuth. The tampon is removed on the fourth or fifth day and is not reintroduced. The wound heals kindly and while small perforations occasionally follow they cause no annoyance. The time required for preparation and to complete the operation described, varies from one-half hour to one hour, or even longer. Such extensive removal of the cartilage may be thought to endanger external deformity, though such is not the case, and the only external effect ever observed is a straightening of a previously bent nose. The breathing through the nostril is more free immediately after the operation than for some weeks thereafter, as congestion and swelling as well as a certain amount of provisional callous growing on wounded bone and cartilage needs time to be absorbed. After two months or so, the nostril becomes as open as right after the operation.

Dr. Moreau R. Brown called attention to the popular impression that the septum is the support of the nose and that if it is removed, the nose is apt to fall in, therefore one should hesitate in removing it, owing to the liability of legal action should the nose at a later date become deformed through disease or accident. While the operation described would surely be followed with excellent results in certain cases, equally good results can in most cases be secured by first removing all thickenings and growths, and then operating the remaining simple defection in the usual manner. If a Roe forceps be employed it will prove more serviceable if a small male blade is combined with a large female blade. Dr. A.M. Corwin reported pleasing results from the use of the Roe forceps, as described by Dr. Brown, which gives more room for the septum to pass between the blades when they are closed, so the fracture is more complete.

Dr. E. F. Ingals:—Different cases of deflected septa call for different operations, hence the method of preference in each particular case should always be selected. For several years I have employed a 4-per-cent solution of cocaine which very rarely causes constitutional symptoms. The solution is guarded by atropin 1-10

grain, strophanthin 1-5 grain, ol. caryophylli 3 minims and carbolic acid 10 grains to the ounce. The carbolic acid appears to prevent absorption into the blood current to the extent that would occur if it were not used.

Dr. C. M. Robertson:—In nearly all cases of deflection there is redundancy of tissue at the apex of the convexity which should be removed. By injecting a saline solution under the mucous membrane in the concavity, as suggested by Shurly, it can be thus separated and lifted up so as to obviate a perforation being made when the convex prominence is removed. I am chary in my use of cocaine and with a patient who has shown susceptibility to the drug, it is my custom to administer full doses of strychnia for several days prior to an operation coupled with the use of stimulants at the time thereof.

Dr. H. Gradle called attention to the use of a guarded trephine in operations on a deflected septum. Outside of two cases of acute mania I have never been seriously alarmed with the use of cocaine. During the past six years I have used only pledgets of cotton wound tightly around wooden tooth-picks so the amount of cocaine absorbed is not large. In this manner I have used 20-per-cent solutions in hundreds of operations and have never seen any unpleasant results therefrom.

Dr. W. L. Ballenger called attention to the spoke-shave as a means of removing ridges from the septum. He said it should be used with extreme caution, as in cutting through dense bony tissue, such as is found in the posterior portion of the ridge, it is impossible to control the direction of the cut. Perforations of the septum are liable to occur on this account. In order to avoid this accident, he first saws a groove on the under and then on the upper surface of the ridge. This guides the spoke-shave and results in a very smooth and satisfactory operation.

Dr. Freer, in closing the discussion, said that it is the amount of cocaine absorbed by the patient that endangers him and not the concentration of the solution employed. With powdered cocaine an intense local effect is produced, while but little cocaine is absorbed. The swab used is moistened before it is dipped into the cocaine powder so it is really applied in the form of a thick syrup, which adheres to the part touched with it, while a solution of cocaine diffuses itself over a larger surface with greater danger of absorption.

LARYNGOLOGICAL SOCIETY OF LONDON.

Seventy-first Ordinary Meeting, February 7, 1902.

E. CRESSWELL BABER, M. B., President, in the Chair.

The following report of the Morbid Growths Committee was read:

1. On Dr. Milligan's case of fibro-sarcoma of the right vocal cord. Shown on January 10, 1902.

"After examination of the specimen submitted, the Committee report that they can find no sufficient evidence upon which to base a diagnosis of fibro-sarcoma or malignant disease. The bulk of the growth consists of fibrous tissue. The Committee suggest that the structures observed are the outcome of a slow inflammatory process."

2. On Dr. Milligan's case of pharyngeal lipoma. Shown on January 10, 1902.

"The microscopic examination confirms the diagnosis."

The following cases and specimens were shown:

Case of Tuberculosis of the Larynx with Marked Swelling of the Thyroid Cartilage in a Man aged 37.

Shown by Mr. Richard Lake. The patient had been sent into the Mount Vernon Hospital at the end of 1898, where he remained for three months, during which period at least forty pieces were removed from his larynx. The lung was only slightly affected, and, as far as physical examination went, this was entirely cured when the patient left the hospital. His larynx also was cured, and remained so for about eighteen months. During the latter half of 1901 he complained of occasional swelling of his thyroid cartilage; this, however, went down with a small amount of treatment, the interior of his larynx never showing any signs of recurrence.

He was not seen again until about three weeks ago. The condition was then much what was seen now: The thyroid cartilage was enormously thickened, was rather hard, and inclined to be uneven on its surface. Internally there was a pointed or conical projection forwards of the right ventricular band. He appeared to be more anæmic and thinner than he had been three months pre-

iously. His voice was much worse than it was; in fact, he could only make himself intelligible with great effort, which effort was accompanied by pain.

The case was brought before the Society for an expression of opinion as to the nature of, and best form of treatment for, the disease of the thyroid cartilage.

Dr. Dundas Grant thought the condition looked like tuberculous perichondritis of the thyroid cartilage, but the progress was certainly rather slow. He had seen this in a case of laryngeal phthisis, eventually resulting in an abscess, but, if he recollected the case aright, its course was much less indolent than that of Mr. Lake's case. As regards treatment, he suggested that the right course would be to open it, and having explored, to drain and inject the iodoform. It would be unfortunate if the whole thyroid cartilage were to come away as a sequestrum, since the obstruction following that would be very severe.

Mr. R. Lake said he last saw this patient only a fortnight ago, and until then he had not seen the man for some time. The swelling was not then so extensive, but much harder. Four months ago when he saw him there was some temporary perichondrial trouble. He showed the case because he wanted suggestions as to what was to be done.

Case of Rhinorrhea of Some Years' Duration in a Woman aged 38.

Shown by L. A. Lawrence. The patient had had discharge of a clear fluid from the nose for many years. This followed an attack of general edema at the age of 20, probably of acute renal origin.

The rhinorrhea, from being occasional and fairly profuse, is now clearly constant, except when the patient has cold, during which time it stops almost entirely.

In 1895 she was seen several times by Dr. Edward Law, when the nose was fairly clear and dry at the back. Her sense of taste and of smell in those days was perfect.

Now she had largely lost these senses. Her nose on the right side showed deflection of the septum to the right, and some enlargement of the inferior turbinate bone, and a polypoid condition of the mucous membrane covering the middle turbinal.

On the left side the same sort of condition existed, but the turbinal swelling was more marked. The rhinorrhea was more marked

on the right side, and was excited by any kind of stimulus—draught, shutting a door suddenly, etc. Patient had a very large appetite, and slept abnormally well during an attack. She had had some vaso-motor disturbances about her fingers, and analgesia of thighs and hips and upper arms, which was more or less transient.

Local treatment for the nose had been tried—chromic acid and alkaline douches, and the cauterization—without avail. Internal remedies—iron, arsenic, and strychnine—seemed to have done more good; supra-renal extract had also been tried, but none of them had given any certain relief.

The President suggested in reference to the question of treatment that a trial might be given to the method he had employed in a case he had shown to the Society three or four years ago, where the rhinorrhea was arrested by the application of the continuous current externally to the nose. He looked upon the condition as a vaso-motor neurosis.

Dr. Herbert Tilley thought the symptoms were the outcome of some obscure local vaso-motor neurosis, but that failure to give relief in this case should not be assumed until certain obvious pathological defects within the nose had been relieved. In the left middle meatus was a polypus the size of a horse-bean, and similar chronic inflammatory changes could be seen in the right nasal cavity, although the exact definition of such changes was obscured by a very prominent deflection of the septum towards the right side. It was highly probable that the removal of such obvious pathological changes would give at any rate partial relief to the symptoms.

Dr. H. Lambert Lack agreed with the last speaker as to the condition of the middle turbinates, and considered the case just one of those in which local disease in a neurotic subject was responsible for the rhinorrhea. The same local conditions in another patient might not cause such symptoms. He thought that both middle turbinates should be partially removed.

Mr. F. H. Westmacott said that the part which at first sight looked like a polypus, having a glazed translucent appearance, was, he thought, really due to some of the discharge having dried upon it. On looking carefully one might see a condition of lobulated hypertrophy of the middle turbinate bone. He had had a good many of these cases, and had been struck with the advantage accru-

ing from removal of one or more of these protrusions of the mucous membrane and applying pure carbolic acid every day for about a fortnight. As carbolic acid was an anesthetic, the application was painless, except for a little momentary smarting. Patients stated that the anesthetic effect of the acid remained for quite twelve hours, and in some cases for twenty-four hours. He found this treatment effected a considerable diminution in the rhinorrhea, and if, as in this case, the inferior turbinals were not so much affected, a good deal of improvement took place. As regards the mode of application, this was done by means of cotton wool wound round the end of a wire probe; the wool was dipped into the acid and then applied the whole way round the edge of the middle turbinate bone.

Dr. Pegler said that no mention had been made of the deflection of the septum to the right side, which was a source of trouble in continually keeping up contact with the outer wall. The polypi of the middle turbinate might be attributed to the general sodden state of the mucous membrane. Glacial acetic acid would be a good application to try in this case, but the result was not reliable.

Dr. Dundas Grant said that the correction of the septal deviation either by straightening or by removing a projecting part would be very advisable for the purpose of manipulation of the deeper parts of the nose. He did not think it likely that the septal deflection was directly one of the elements in the production of the trouble. The attacks of so-called cold seemed to be almost daily, and answered very much to the description of hyperesthetic rhinitis. He asked whether adrenalin had been tried.

Dr. FitzGerald Powell was of opinion that this case represented what was understood as hypertrophic rhinitis. The middle turbinate was enlarged, and the inferior turbinal slightly so, and there was a distinct spur on the septum. He thought that the only chance of getting much relief would be to remove in some way portions of the middle turbinate, either by shaving them off or by the use of the cautery. Local application of washes, etc., in his opinion, would have no effect until the abnormal portions referred to were removed.

Mr. L. A. Lawrence said that adrenalin had been tried, but without benefit. He was much obliged for all the suggestions that had been made, but they were all offered with the idea of relieving the

nasal obstruction. With regard to that, he supposed that most of them would agree that the nasal obstruction should be removed, but was the nasal obstruction the cause of the rhinorrhea? That was the important point. Many people had a deflected septum, or an enlarged turbinate, or polypoid masses, but they did not suffer from rhinorrhea as a consequence. The patient was of an extremely neurotic tendency. He was afraid if he followed all the advice given there would not be much left of the interior of the nose. He wanted to hear if there was any experience of this nature having been treated otherwise than by removal of obstructions and portions of the turbinates, etc., and would welcome any suggestions of that sort.

Case of Lupus Nasi.

Shown by Mr. F. G. Harvey. The patient, a man aet. 24, had suffered from an obstruction to breathing in the right side of the nose ten years ago. A swollen condition of the right inferior turbinal was noticed at that time, and the disease had since successively implicated the skin of the tip of the nose, the posterior choana and pharyngeal roof on the right side, and the epiglottis. The region of the inferior turbinal and the skin of the nose had been cured by the use of the curette, but the disease remained active in the roof of the naso-pharynx.

Mr. Parker said that this case had been under his care for many years. He first saw the patient in 1894, when he came to the hospital suffering from nasal obstruction of three years' duration. There was apparently, then, an ordinary hypertrophic outgrowth from the inferior turbinal. This was removed. Instead of healing the wound became ulcerated, and assumed the characteristics of a tuberculous ulcer. The chest was then examined, and well-marked signs of phthisis discovered. It was an interesting point as to whether the outgrowth originally removed was a tuberculoma or whether it was hypertrophic, and whether, if the latter, the resulting wound had been infected from the lungs. The ulceration had extended and affected the pharynx, and in May, 1895,* the case was shown here as one of "tubercular ulceration of the nose and pharynx." After this date the patient developed typical lupus in the skin of the nose, and a little later the epiglottis became affected. Meanwhile the condition of the lungs improved, and then became

*See "Proceedings," Vol. II, p. 83.

quiescent. Whilst under his care Mr. Parker had tried both local and general treatment, but the only thing which did him any real good was a very severe attack of erysipelas, after which he was very much better for a long time. The speaker had last seen the case about three years ago, and he thought the present condition was very much as it was then.

Case of Partial Membranous Occlusion of the Right Posterior Choana.

Shown by Dr. Lambert Lack. The boy, aet. 18, had thin crescentic bands passing from the roof of the naso-pharynx down towards the base of the nasal septum attached along the outer side of the space, almost completely hiding the choana on the right side, and less prominent on the left side. There was a small perforation of the septum, and the boy said he had had a discharge of thick matter from the nose some years ago, but no reliable history could be obtained.

The President had made a careful examination, but did not think the partial occlusion was on the choana itself, but behind it. It was a band extending up from the Eustachian cushion, and looked like a cicatrix, but he was unable to obtain any history of an operation. There was also perforation of the septum.

Dr. Scanes Spicer agreed with the President as to the membrane being posterior to the choana and in the naso-pharynx; the band extended upwards from the right Eustachian cushion to the adenoid tissue at the apex of the right choana, and it had the appearance of a cicatricial band, as frequently seen here.

Dr. Dundas Grant thought the case presented a great many points of interest, and it would be valuable if Dr. Lack would describe the history more thoroughly. The patient said that at one time a mass of some sort came away from the back of the throat. It was crumbly in consistence. After that he was able to breathe through the nostrils, although previously he was unable to do so owing to the great obstruction. He thought that these partial web-formations were cicatricial, but felt some difficulty in surmising as to what it was which had come away. It might be simply some inspissated cholesteatomatous matter, which was sometimes seen in the nose, or it might be a soft rhinolith or a sequestrum. From the deformity of the part he thought it quite possible that a small sequestrum had come away.

Mr. Spencer thought the diagnosis turned on the question of the septal perforation. The cicatrix seemed rather far back to have been the seat of operative interference. The perforation was probably due to inherited syphilis. Perhaps a sequestrum had come away, which would explain the history given. There also had to be taken into account the facial aspect and the eye symptoms.

Dr. St. Clair Thomson thought he could throw light on the perforation of the septum. He inquired of the man if he had had an operation performed. He had. The patient had performed it himself! He had in his pocket a horse-nail, which he had once pushed up his nose. Dr. Thomson felt so sure on examining the cicatrix that it was traumatic in origin that, when there was no history of any operation by a surgeon, he cross-questioned the man with the result stated. When he once had some nasal obstruction the man pushed the nail up to relieve the obstruction; he then felt something give way; this was followed by profuse hemorrhage. From the appearance and the situation of the perforation, which was not in the bony septum, but at the back of the cartilaginous part, he thought the patient's own explanation was a very probable one. He would like to hear from Dr. Lack, if he had put his finger into the choana, because he (Dr. Thomson) could not say from inspection of the case that it agreed with the description of "membranous occlusion." It was situated entirely on a posterior plane, and there was a somewhat similar condition on the other side. The occlusion really extended from the cushion of the Eustachian tube up to the roof of the pharynx. Such an occlusion was not uncommonly left by adenoid remains.

Dr. FitzGerald Powell said it would be rather interesting to get a portion of the band away and have it examined under the microscope to make out the exact construction of the tissue. It might be, as suggested, cicatricial tissue, but it was difficult to explain exactly how it came to exist there. Whether it was a developmental growth and had always been there or whether it was a growth of adenoid tissue arising in the fossa of Rosenmuller which had become attached to the cushion of the Eustachian tube was doubtful. If there had been nasal obstruction, and this was cleared up by something coming away, it was probably a large crust.

Mr. Spencer doubted whether it was possible for the patient to have pushed such a nail through a healthy septum. To have done

so there must have been previous ulceration or softening. He probably pushed away a crust or sequestrum which was obstructing the nasal passage.

Mr. Westmacott thought a man could easily injure the septum with a nail of that size. It was well known how easily an ulceration in the septum following traumatism did spread through to the other side and leave a typical perforation such as they had now before their notice.

Dr. H. Lambert Lack, in reply, regretted that the history was incomplete and unreliable. He should say that the mass which was said to come from the post-nasal space was probably a sequestrum. He had put his finger into the space and had found a very definite band with a concentric margin, which was quite different to anything he had ever felt before in the adhesions which occurred in a man with adenoids. He did not think it was due to adenoid growth, but more likely to congenital syphilis.

Case of Edema of the Larynx for Diagnosis.

Shown by Dr. Lambert Lack. The patient, a man aet. 40, had been in the London Hospital for three months suffering from hoarseness and slight dyspnea. The voice had been affected now for nearly six months. There was no difficulty in swallowing and very little expectoration. There was some wasting, but the patient felt well and strong. There were no physical signs of plithisis, and no tubercle bacilli had been detected in the sputum.

On examining the larynx the right arytenoid region was seen to be an immense edematous swelling, smooth and not ulcerated. The edema extended slightly to the right side of the epiglottis. The left arytenoid appeared normal, but was partly hidden by the swelling on the right side. The interior of the larynx could not be seen.

Mr. W. G. Spencer thought the diagnosis of this case very interesting. It looked almost as if it were a malignant condition, but there were no glands in the neck, and in epithelioma in that particular region the glands in the neck were so early enlarged; in fact, very often the glandular enlargement preceded the discovery of primary epithelioma. The disease could not very well be tuberculous owing to the length of the history and the absence of glands in the neck. He was therefore of the opinion that it must be of syphilitic origin.

Dr. St. Clair Thomson had shown a very similar case to the Society about a year ago. It ran a very erratic course. Several members thought it might be malignant. He watched the patient and had to perform tracheotomy later on. Very soon afterwards the patient's health broke down, and he died of tuberculosis, bacilli having been found previously. Dr. Horne had possession of the larynx. The post-mortem examination was confirmed by sections.

Dr. H. Lambert Lack said he brought the case forward because he could not arrive at a diagnosis. The case had been thoroughly treated with iodide of potassium and mercury, and he had been kept in bed in hospital for three months. There were no tubercle bacilli, and further, if the case had been tubercular in nature, it would probably have got markedly worse under iodides. The man was wasting. He did not know if sarcoma was a possible diagnosis, but it might have to be taken into account.

Case of (?) Syphilitic Ulceration of Soft Palate Occurring During a Course of Antisyphilitic Treatment.

Shown by Mr. Atwood Thorne. The patient, a man aet. 23, contracted syphilis in May, 1901, since when he had been treated with mercury, and latterly with mercury and potassium iodide by the mouth. After eight months' continuous treatment he was found to have deep ulcers on the soft palate, and despite active local treatment with silver nitrate the patient had got worse and lost his uvula and a part of the soft palate; he looked exceedingly ill and was very feeble. He complained that he had lost a great deal of flesh, and had some difficulty in swallowing. On examining the throat, the uvula and part of the soft palate adjacent to it were now missing, the edge of the remaining portion being covered with a dirty white slough, and on the posterior walls of the pharynx and on the posterior edge of the septum nasi there was a yellowish thickened exudate. Crepitations were heard at both apices, but no tubercle bacilli could be found in the sputum. Antisyphilitic remedies had been stopped, and every endeavor made to feed up and strengthen the patient.

Mr. Thorne asked for the opinions of the members on the nature of the case; personally he took it to be at any rate due partly to syphilis, but was surprised that the condition should commence while the patient was being actively treated for syphilis.

Dr. St. Clair Thomson would like to hear again what treatment

the man was having. He looked very cachectic, and as if he would not stand very much. He regarded the case as one of syphilis only.

Dr. Dundas Grant thought there was a tubercular element in this case. They knew that occasionally in secondary syphilis ulceration and destructive lesions occurred, but they were very uncommon. The very extreme ulceration occurring so soon in the course of the disease, together with the general characteristics of the patient, made one ask if there were any further evidence of tuberculosis.

Mr. Spencer said it might be a "mixed" case of tubercular-syphilitic infection. If the iodide were continued the man would certainly die. He recommended keeping the patient in bed and putting him on the "tonic" treatment; very little mercury should be given.

Mr. R. Lake thought it was a perfectly straightforward case of syphilis without any question of tuberculosis. He did not think twelve months so very short a period for even such extensive lesions as were present in this case, for ulceration might commence early and be followed by severe destruction of tissue when a case was going to be really severe.

Dr. Lambert Lack agreed with the previous speaker's remarks. It was purely a case of syphilis, and if the man were treated by being put to bed and fed on plenty of milk and eggs, with a little anti-syphilitic treatment, in a month he would be practically well.

Dr. FitzGerald Powell thought that large doses of iron and strychnine were very necessary in such a case as this. He had found that iodide of potassium and mercury in cases where a man was in an anemic condition were worse than useless. If it were possible he would send this man to the seaside, and as he improved in health, in addition to the iron and strychnine, he would give him just a little iodide of potassium and mercury; under this treatment he would soon get better.

Mr. Atwood Thorne, in reply, said that on examining the chest, he found distinct evidence of phthisis, but there were no bacilli in the sputum. While the man had the chancre, he was put on mercury, but during the last month a small amount of iodide had been added. He thought it was a mixed case and would feed the man up and give him small doses of iodide and mercury.

Case of Myeloma of the Nose in a Woman aged 30.

Shown by Mr. Waggett. The patient, previously quite healthy, began to notice nasal obstruction June, 1901, three months after confinement. Obstruction increased until, at the time of her visit, in October, the right side had become completely blocked, and epistaxis was frequent.

On examination the right nostril was found to be filled by a large dark red growth, with an intact smooth surface, feeling elastic to the touch, but bleeding readily. The right eye was more prominent than the left. Under an anesthetic the large tumor, which completely filled the nose, was removed piecemeal and without serious hemorrhage. The tissue was dark in color, of firm consistence, and contained a sponge-work of bony trabeculae.

Microscopic examination showed the structure to be typical of myeloma, containing numerous giant-cells (specimen exhibited). During the operation it was found that the growth had created a smooth-walled pressure cavity encroaching upon the orbit. Proptosis disappeared within two days of operation. In consequence of the microscopical diagnosis of tumor of only a local malignancy, a more radical operation was undertaken a few days later.

The seat of origin of the growth seemed to be in the region of the middle turbinate or of the unciform process. Rouge's operation was therefore performed, the anterior wall of the antrum and part of the septum were cut away, and the greater part of the inner wall of the antrum and of the inner wall of the orbit was removed.

The exact anatomy of the parts, deformed by encroachment of the tumor and obscured by free hemorrhage, could not be determined, but apparently a thorough removal was made of all suspicious tissue. Free access could not be obtained until laryngotomy had been performed and the gag removed from the mouth. Apart from the effects of orbital hemorrhage the patient did not suffer much from the operation, and healing took place within the nose very rapidly. This process was accompanied by so marked and rapid a diminution in the size of the cavity that suspicion was aroused that the restriction was due not merely to cicatrisation, but to recurrence of the growth. Opinions were invited upon this question. Against the diagnosis of recurrence were the healthy

appearance of the mucous membrane, the absence of epistaxis and want of any noticeable change during the last six weeks. The general health was excellent and pain absent.

Mr. W. G. Spencer would not say that the growth had recurred, he would wait till it bled continuously, for these tumors were very vascular. The nose required to be kept very clean as in atropic rhinitis.

Dr. H. Lambert Lack asked if the nose was still gradually closing, because if that were so it might be due to recurrence. He did not think it would be possible to do any more if a recurrence took place.

Mr. E. B. Waggett said, in reply to Dr. Lack, that he thought the contraction took place during the first month, and that it was not contracting now. Three months had now elapsed since the operation. The contraction was especially noticeable in the region of the right choana where the septum seemed to pass away into the outer wall of the nose, which was precisely the part not affected so that he was in hopes that the structures were cicatricial and not evidences of regrowth.

Case of Abeyance of Nasal Breathing in a Female aged 23; Nasal Passages Free; Hysterical Aphonia; Rhinalgia.

Shown by Dr. Pegler. The patient had been shown in 1899 for functional aphonia and recurrent aphosia, which still persisted. Soon after that occasion she had developed mouth breathing, and her speech, though aphonic, became "clipped," a defect known as Rhinolalia clausa. There being a pad of adenoids and considerable turbinal hypertrophy in both chambers, these impediments to nasal breathing had been radically eliminated, but instead of the patient gaining any benefit, the above-named symptoms grew worse, and so they remained. Rhinalgia had been much complained of, especially recently; the mouth was always open, and the breath was peculiarly disagreeable, possibly owing to this fact. Before speaking, with a view, perhaps, to getting some use of her nose, she made a clicking kind of sound with her palate. The velum, on inspection, appeared paretic, but the exhibitor had no hypothesis to offer, especially in the light thrown upon his case by the next one, except that the nasal breathing and resonance were shut off by spasmodic contraction of the soft palate.

The photograph marked 1 showed this patient before her

various hysterical symptoms set in, and when she was teaching in a school; the mouth was closed, and the expression highly intelligent. No. 2 photograph had been taken recently, and showed a very marked deterioration in this respect, with open mouth and dilated alae nasi.

The President thought it a "hysterical" case. One had seen such cases, in which people occasionally talked without using their noses, although there was no obstruction, and were unable to pronounce "m" and "n," and converted these letters into "b" and "d." He put down similar cases he had seen to neurosis of the palate. Dr. Pegler thought that in his case there was a spasm of the palate, but whether that was proved or not he was not aware.

Dr. Scanes Spicer thought this case a very important one. Dr. Pegler had quite satisfied him personally that there was now no organic obstruction, and yet, when the mouth was closed, no air entered on the patient attempting to inspire. After a time, unable to do without air any longer, she opened the mouth and violently inspired. The explanation appeared to be a functional spasm of the soft palate and pharynx—a hysterical contraction at a time when normally there should be a relaxation or yielding to the incoming air-current. It might otherwise be regarded as a hysterical holding of the breath by the soft palate. There was evidence of hysteria in the adductor laryngeal paralysis, so that apparently there was in this palatal spasm another instance of perverted respiratory rhythm parallel to what was occasionally seen in the larynx in hysterical subjects. The case demonstrated without any organic obstruction in the nasal passages to compel such abeyance. He thought the patient would be benefited by treatment of the causes of obstruction he had pointed out. Perhaps stretching the soft tissues of the alae, followed by the use of rubber dilators at night, and education of the dilator muscles, would be ample. As to the soft palate in this case, he thought it was paretic rather than spastic.

Mr. Waggett suggested that the woman should be treated like a hysterical person with aphonia, namely, by forcing her to breathe through her nose by shutting the mouth and tying it up.

Dr. FitzGerald Powell said that as the patient could blow out a spirit lamp held under the nose whilst her mouth was closed, there could be no real obstruction. Apparently the soft palate seemed

to suffer from some neurosis just in the same way as the cords suffer from neurosis in functional aphonia. There was a greater or less degree of post-nasal catarrh with a good deal of mucus coming down from behind, and probably the palate was in a more or less rigid condition. He hoped to be able to show a similar case at a future meeting suffering from functional obstruction to the breathing. The nose had been cleared of all objective causes of obstruction, but nevertheless the breathing had become worse.

Dr. William Hill thought that in this case there was a want of co-ordination between nasal inspiration and the muscular actions of the palate and pharynx.

Mr. Atwood Thorne said that as the patient had a good current of air up and down both nostrils, he would advise breathing exercises with a forcibly closed mouth, and the usual general treatment for hysteria.

Dr. Dundas Grant said that in this case there was a condition of anesthesia; as the patient did not feel the air which passed through the nose, she therefore did not think it did pass.

Dr. Jobson Horne inquired whether the possibility of tuberculosis had been entirely excluded as a factor in the aphonia.

Dr. Pegler agreed with Dr. Hill, and thought the term hysterical inco-ordination of the muscles of the soft palate and pharynx would supply what was wanted in that regard. It was remarkable that since the nasal operations the symptoms had been aggravated; this might be due to the influence of auto-suggestion.

Case of Abeyance of Nasal Breathing, the Passages Being Free, Palate and Fauces Hyperesthetic.

Shown by Dr. Pegler, A. G., aet. 31, came to the Metropolitan Ear, Nose and Throat Hospital a few days ago complaining of her speech. ("Her bother said there bust be subthig the batter with her throat, because she always spoke through her dose.") Patient dated the defect from November last, when she was sent to the North-Eastern Hospital as a case of supposed diphtheria. On her return she states that in drinking fluids returned through her nose. Dr. Cuff, however, assured the exhibitor that the case was one of tonsillitis only; and that three separate cultures failed to disclose any Klebs-Löffler bacilli.

The mouth is kept open constantly. Examination of the nose and naso-pharynx gives a negative result insofar as explaining

the total absence of nasal breathing and resonance were concerned. The pharynx was so irritable that repeated cocaineization was necessary in order to gain a satisfactory inspection of the post-nasal space. There was no nasal anesthesia, but pain was complained of over the bridge. There was paresthesia of the pharynx in the form of a pricking sensation in the throat, and the patient was constantly "clicking" and "hemming." Following the suggestions made in Dr. Lermoyez's paper on a similar case, Dr. Pegler closed the patient's mouth with his hand, when she held her breath till cyanosis set in, but after a violent effort the patient respired through the nose. Suspecting that palatal spasm was operating here as in the last case, Lermoyez's other experiment was tried, and the palate tied up by a tape passed through the nose, naso-pharynx, and mouth, the two ends being secured over the upper lip. After a slight effort the patient breathed comfortably through the nose, her mouth being closed. The (moral) effect of this treatment was permanent, for the speech defect was now nearly absent. The photograph marked A shows this patient prior to her throat attack; the mouth is closed and the features natural. B shows the patient taken previous to treatment the other day, and is in obvious contrast to the former one.

Dr. Scanes Spicer took exception to Dr. Pegler describing the air-passages in this case as being entirely free, since insufficiency was proved by marked collapse of right ala on inspiration. There were three objective cases of obstruction: 1. The right nostril was a slit, and the ala collapsed on that side on attempting inspiration. 2. The septum was deflected, the deviation being sigmoid. 3. There was enlargement of the right middle turbinate with dry crusts. Certainly this case could not be placed in the same category as the previous one.

Dr. Vinrace said that regarding the doubt as to whether this patient had had diphtheria, he would like to point out that the regurgitation of fluids through the nose after the attack was, to his mind, stronger evidence in favor of diphtheria than the failure to find bacilli was against it. He would like to know whether this condition was or was not the result of diphtheria.

In reply to Dr. Vinrace, Dr. Pegler said he was content to accept Dr. Cuff's assurance with regard to the absence of diphtheria, besides which no point was made supposing the disease had ex-

isted; there might have been a paretic palate in the first instance, but the speech and breathing defect pointed to the opposite condition of spasm.

Dr. Vinrace remarked that if one searched for the bacillus and failed to find it, it did not follow that the patient had not had diphtheria.

Dr. Pegler, replying to Dr. Scanes Spicer, said he was sorry that he could not persuade that gentleman to regard the case in the same light as he did. The unilateral insufficiency was not of a kind that he should treat by operation, seeing that an armed probe passed comfortably through the narrower chamber, whereas in the companion one he was able to discern the pharyngeal wall easily without the aid of cocaine. As in the previous case, he looked to the vagaries of the tensor and levator palati muscles for an explanation of the phenomena, and thought the simple experiment of tying up the palate was conclusive in its result. Kyle alluded in his book to spasmodic affections of the palate, and in this case there were other evidences of choreic or spasmodic action in the upper air-passages. The inspection of the larynx showed contraction of the ventricular bands in phonation, which perhaps explained the hoarseness of the voice.

Case of Progressive Ulceration of a Nose.

Shown at the last meeting by Dr. Bennett. It had been suggested at the last meeting that the ulceration of the septum might have been due to antral suppuration. Dr. Bennett had therefore explored, but found no discharge.

Case of Edema of the Larynx With Thickening of Palate, Uvula, and Fauces in a Boy aged 10.

Shown by Mr. F. Hunter Tod. This case was under the care of Dr. Percy Kidd at the London Hospital. The boy's mother had noticed that for two years he had breathed through his mouth, and was very noisy in his sleep. Between October and December, 1900, he had had four operations on the tonsils and the back of the throat, but without relief. There had been wasting and day and night sweats, and difficulty in breathing at night.

At the present time the patient was thin, pale and pigeon-chested. There was slight bronchitis, but no signs of pulmonary phthisis. The temperature was normal. No bacilli had been found in the sputum. There were no signs of congenital syphilis. There was

laryngeal stridor, which was much worse at night, accompanied by retraction of the chest, but cyanosis had never occurred. Examination of the larynx showed enormous enlargement of the epiglottis, which was smooth and of a pale color, and prevented a view of the anterior of the larynx being seen. The tips of the arytenoids could be seen, both, but especially the left which seemed fixed in the middle line, being pale and much swollen. No ulceration was visible. The condition had remained unchanged since admission to the hospital four weeks ago. The uvula was much enlarged and edematous, and there was considerable thickening of the palate and fauces. Mr. Tod suggested that the diagnosis rested between tubercular laryngitis and congenital syphilis, and that the patient should be fed well and given antisyphilitic treatment, and that tracheotomy should be performed if it should become necessary.

The President said the condition reminded him of congenital syphilis.

Mr. Spencer said this was an interesting case, but he did not know what its origin was. There was some danger of his dying of suffocation suddenly one night. Something ought to be done to avoid this; for instance, tracheotomy combined with rest for a time, and careful treatment on the same lines as those proposed by Hunter Mackenzie for laryngeal growths in children. One night, in addition, remove the tonsils, and the lower pharynx, including the epiglottis, might be lightly scarified, and astringents rubbed in or cauterized.

Dr. Dundas Grant asked if any albumin had been found in the urine. He had shown a case (March, 1897) to the Society of a boy who had had scarlet fever, with subsequent albuminuria, in which the edema persisted very much as it had done in Tod's case, although he had some suspicion that the boy was the subject of inherited syphilis. He asked whether tuberculosis had been excluded in Mr. Tod's case. Tuberculin might afford information in a case of great doubt.

Dr. Powell considered it a case of hereditary tertiary syphilitic infiltration, and would like to hear if the boy had been put on antisyphilitic treatment. If not, he suggested that the boy's general health should be attended to by tonics, and that then antisyphilitic treatment should be employed. If there was any danger of laryngeal spasm tracheotomy ought, of course, to be done. At present there did not seem to be any spasm.

Mr. Lake said he would give the boy Hyd. c. Creta.

Mr. Hunter Tod said that Dr. Percy Kidd was inclined to think that it was a case of tubercular laryngitis, although there was no sign of pulmonary phthisis nor tubercle bacilli in the sputum. He had not been put on antisyphilitic treatment because he wished to see the effect of good diet and tonics. On admission there was so much laryngeal obstruction that tracheotomy was nearly performed, but at present there was no danger of suffocation as the boy could sit up all day quietly, and could sleep all night in the recumbent position.

Ethmoidal Suppuration in a Man Complaining of Excessive Pain.

Shown by Mr. Waggett. The patient had been under treatment for some years. The greater part of the ethmoidal cell region had from time to time been removed. Both frontal sinuses had been opened and found healthy. Very severe frontal and vertical pain was complained of, and suggestions for treatment were asked for. A marked neuropathic element was present.

Dr. Vinrace wished to know what were the indications for the operative treatment of the frontal sinuses which had been resorted to twice in this case, and what were the beneficial results which were claimed after each of these two operations. Further he did not see why the left side had been interfered with when it was the right side on which there was the nasal obstruction. In the first instance it seemed that vertical headache was the prominent symptom, and in the second instance there was supra-orbital pain on the left side; and subsequent to the second operation, new symptoms had been introduced, and he would like to know if these were to be attributed to the second operation. As far as he could ascertain the sight had been affected and the patient was very giddy. It was very gratifying to him to hear of such good results following these operations, but the perplexing point was that, according to the account of the patient, when the first operation was done, the only pain he had was that of vertical headache, there being an absence of symptoms in the region of the frontal sinuses.

Dr. Lambert Lack thought the man had now had sufficient done to the nose, and the results of the operations were good. The man was now suffering from neurasthenia.

Dr. Jobson Horne said that this man was under his care for some few weeks after being under the care of Mr. Waggett, but he could

find no sufficient cause for operating, and he thought that was the reason why the patient left him. The patient seemed to attach too much importance to his symptoms, and he advised him to undergo no further treatment for a while.

Dr. FitzGerald Powell said that this man had also visited him. He came to him after leaving Mr. Waggett, but he had only seen the man once; he did not recommend active enough measures. It was evident that there must be some considerable amount of pain in the frontal sinuses or forehead, whatever might be the cause of it, or he would not be so persistent in complaining of it. He suggested to Mr. Waggett putting in a seton, as in some cases frontal headache had been considerably relieved thereby. If the patient had remained under his care, he would have put in the back of the neck an ordinary tape, which might have had the effect of removing the pain to some extent. He would like to hear whether the frontal sinuses had been obliterated by operation.

Mr. F. H. Westmacott asked whether it was not an experience quite commonly found after operation in cases of frontal sinus disease that the patient did very well for a time; the discharge ceased and the patient became apparently well. But after a time there was a periodical recurrence of the symptoms as regards the pain, etc., and yet on looking into the nose there was nothing, or very little, to account for the recurrence. In one or two such cases he had given considerable relief by simply passing up a cannula into the infundibulum and inflating the frontal sinus, after which the pain went away instantly. If in two or three weeks the patients again complained of their pain he repeated the process and with the same temporary success. He had come to look upon this state of affairs as very largely due to neurotic causes. There might be some foundation for the pain no doubt in local congestion.

Mr. Waggett said that this man had in the first place ethmoidal suppuration, and in the second place he was undoubtedly a hypochondriac of the worst type. He had treated him according to the rules of rhinology, with the exception that he had not yet explored the sphenoidal sinuses. The frontal sinuses were explored as severe frontal pain and tenderness were experienced, and the ethmoidal cells in the neighborhood were suppurating.

Case of Subjective Nasal Obstruction.

Shown by Dr. Dundas Grant. Miss E. E., *act.* 34, was first seen by Dr. Dundas Grant on February 6, 1902, when she com-

plained of a feeling of suffocation and inability to breathe through the nose. The right nasal passage was almost normally free, and the left one patent to an abnormal degree. There was considerable atrophy of the left inferior turbinated body, the posterior wall of the pharynx and the "arcade" of the posterior choana being visible to a considerable extent. There was a very slight tendency to alar collapse, but not sufficient to interfere with breathing. The mucous membrane was abnormally tolerant of manipulation with the probe, and in fact there was a considerable degree of anesthesia. The exhibitor attributed the subjective obstruction to this anesthesia. The patient did not feel the air passing through the nose, and had consequently acquired a fixed idea that it did not do so, and that she could therefore only breathe through the mouth. Dr. Grant said that this was the mechanism of many cases of subjective nasal obstruction.

Dr. Scares Spicer was of opinion that there was marked insufficiency of passages in this case, due to stunted evolution of the nostrils, and there was collapse on inspiration. He thought the insufficiency would be overcome by dilation, wearing rubber tubes, and re-establishment of normal action of nasal inspiratory muscles. When this was done he believed, from his experience of similar cases, that the patient's sense of stuffiness would disappear.

Dr. Dundas Grant said the patient was a very highly neurotic subject, and there was some, though not very great, tendency to collapse of the alae. The left nostril, in his opinion, was at all events abnormally patent, and there was ample room for breathing purposes if only she were conscious that the air could go through. Considerable anesthesia of the nasal mucous membrane was present on both sides, and he believed this was a large factor in many of these cases.

A Specially Constructed Glass Tube for the Inhalation of Medicinal Powders into the Larynx.

Shown by Dr. Dundas Grant. A glass tube of about 6 inches in length is bent at one end into a crook of about $\frac{1}{2}$ inch, while $2\frac{1}{2}$ inches of the other extremity are bent downwards at an obtuse angle. The short crook, lying downwards, is pushed by the patient to the back wall of the pharynx, and the opposite extremity is allowed to dip into a small quantity of light powder in a watch-glass or plate; the patient then closes his lips and draws in his breath

rapidly through the tube so as to inspire some of the powder. This, following the inspiratory blast, finds its way, according to the inventor of the method, into the larynx. It is a method of great simplicity, and has the advantage that it can be carried out by the patient himself under the direction of his medical adviser. Its inventor, Dr. S. Leduc, of Nantes,* strongly recommends the use with it of the powder known as di-iodoform, and he deprecates the employment of crystallines such as those of ordinary crystallized iodoform. Dr. Dundas Grant had used with it orthoform and resorcin, and had seen by the laryngoscope the powder adhering to the interior of the larynx. It had given great relief to several patients with laryngeal phthisis to whom he had given it.

Dr. A. J. Hutchison said that these tubes were not new, for he had know of them for four years. They were brought out first on the continent, either in France or Germany. To the small extent he had employed them he had found them very useful.

Wooden Probes and Cotton Carriers.

Shown by Dr. St. Clair Thomson on January 10, 1902. Dr. Thomson had met with these wooden probes in a throat clinic in Germany last summer. There was nothing particularly novel in them beyond the fact that they were remarkably cheap and reliable. They were cheap because they were originally manufactured wholesale for use in the making of sausages, and were known as "Wurststabchen," and were carefully sterilized under government control. They could be cut in suitable lengths, and were useful as probes for applying caustics, as cotton carriers, and for other purposes. When cotton-wool pledgets had to be left in the nose, it was much easier for the patient to remove them if the cotton were first wound round a wooden probe which was then cut off flush with the orifice of the nostril. These wooden probes were kept in stock by Messrs. Mayer and Meltzer, and by Mr. Rogers, of Oxford street.

*See "La Gazette Medicale de Nantes," November 16, 1901.

SELECTED ABSTRACTS.

Epistaxis.—A. C. TENNEY—*The Clinique*, Nov. 1901.

The author reviews the etiology as given by the various text-books. In the treatment of those cases resulting from hemophilia, the author very strongly recommends the giving internally of large doses of the distilled extract of hamamelis. "The dose varying from thirty or sixty minims to two or three drachms every half hour," until the hemorrhage is controlled or nausea is produced.

STEIN.

Rhinoliths.—J. W. SMITH—*Illinois Medical Journal*, Dec. 1901.

The case reported is a child of four years and eleven months. The concretion weighed eight grams, and was found imbedded in the tissues of the right inferior meatus. (The age of the child makes the case unusually interesting.—Stein.)

STEIN.

Are the Tonsils to be Regarded as Normal Physiological Organs of the Body?—FRANK H. BOSWORTH.—*N. Y. Med. Record*, January 11, 1902.

Some twenty years ago the author stated that there are no tonsils in a healthy throat, and his experience since then corroborates that statement. Hypertrophy of these lymphatic bodies constitutes a distinct menace to the health and welfare of the body in the filthy launae which make up its main bulk. The indication is to remove these bodies in a thorough manner. The author employs the cold wire snare, and finds it a better instrument than the tonsillotome. For a general anesthesia in children, chloroform has been used for twenty-five years, and no dangerous tendency or symptom has been observed.

LEDERMAN.

Removal of the Tonsils by Enucleation.—ST. CLAIR THOMSON
(*Lancet*) *Feb. 16, 1901.*

At a meeting of the Medical Society of London, on February 11, Dr. StClair Thomson exhibited two cases to show the desirability in certain cases of removing the tonsils by enucleation. The first patient was a woman, aged thirty-eight years. In 1894, she was in close attendance on her husband, who was very ill with tonsillitis and a foul discharge from his throat. Soon after she noticed in her tonsils cheesy collections of offensive taste and fetid odor. The local conditions were very similar to those presented by her son, who was the second case shown at the same time. For this condition she was under continuous treatment for three years. During two years she attended Dr. Thomson's clinic, and was actively treated with gargles, paints, lozenges, caustics, the galvano-cautery, and incisions laying open the tonsillar crypts. At the same time attention was given to her digestion and general health. She remained unrelieved. Accordingly, two years ago the embedded tonsillar stumps were enucleated under chloroform, and she had since been quite free of the chronic fetid follicular tonsillitis which had been such a persistent nuisance. There had been some regeneration of lymphoid tissue between the pillars of the fauces, but there were no crypts in which these cheesy septic concretions could form. The patient found that her voice had not in any way been injured, but rather improved, for singing. The second patient was the son of the former one. He was a boy aged ten and a half years. When four years old his tonsils were noticed to be enlarged, and they were removed at the Throat Hospital. He was not again troubled with them until after scarlet fever, at the age of six years, when they were again enlarged and were removed with the guillotine at the Throat Hospital by Dr. StClair Thomson. A few months later cheesy collections were noticed in the crypts of the tonsils, and these had since continued almost without intermission. He was under treatment from September to December last. The chief complaint was of his foul breath, which was said to be most marked in the morning, but was perceptible when he was asleep with his mouth closed. The tonsil stumps were seen to be deeply embedded between the faucial pillars. They were riddled with crypts, some of which were half an inch deep. From these crypts dirty white, fetid, cheesy matters were easily extruded. There were no adenoids. It was seen that it was impossible to thread these tonsillar stumps into the ring of the guillotine. In the pre-

vious case all attempts to obliterate the crypts failed. The choice of treatment, therefore, seemed to lie between punching out the remains of the tonsil by morcellation or enucleation, as in the former case. The mother of the boy was so gratified with the result in her own case that she was anxious for him to have the same treatment. The operation was performed under a general anesthetic, chiefly by a pair of curved scissors and the fingers.

ST. CLAIR THOMSON.

Follicular Tonsillitis.—R. C. BROWN, (Milwaukee).—*Med. Record*, March, 1902.

In an interesting paper, the author states that he is inclined to accept the theory of Packard, that different micro-organisms are capable of causing rheumatism. He does not believe, however, that the relation of tonsillitis to that affection is either cause or effect, but that the tonsillitis is produced by the same germs, the faulty or imperfect elimination of whose toxins causes the rheumatism.

In conclusion the author recapitulates as follows:

1. That follicular tonsillitis is not caused by a single microbe, but that many well-known micro-organisms are capable of causing it.
2. That the symptoms of tonsillitis are partly caused by an exaggeration of function.
3. That under the stimulus of infection the lymph corpuscles in the adenoid structure of the tonsil produce an antitoxin, but is antagonistic to invading germs.
4. That the characteristic symptom is an exudate, having no texture and non-adherent.
5. That the presence of the Klebs-Loeffer bacillus is not positive evidence that the disease is not a simple follicular tonsillitis.
6. Lastly, that there seems to be some relation between follicular tonsillitis and the infectious diseases which is not yet properly understood; that whatever the function of the tonsil, it seems in disease to endeavor by its activity to assist nature in eliminating infection.

So-Called Follicular Pharyngitis.—H. L. BURRELL—*Western Medical Review*, Nov. 15, 1901.

The author maintains that the so-called follicular conditions of the pharynx are improperly named; that the condition is essentially one of disease of the lymphatic tissue which is interspersed in the

form of distinct nodules throughout the deep layer of the post-pharyngeal mucous membrane. They are not follicles at all. The name lymphatic sclerosis of the pharynx is suggested as a more proper appellation.

STEIN.

The Tonsils.—ROBERT LEVY (Denver)—*N. Y. Med. Journal*, Oct. 12, 1901.

After careful experiments upon dogs Mangonly concludes that the tonsils bear an important relation to the blood, and that their integrity is an important factor in the struggle of the organisms against the invasion of germs through the mouth.

Ullman remarks that the normal tonsil has a protective function to the organism, but when this function is impaired, the gland then begins to be a nidus for the growth and distribution of pathogenic organisms in the system.

The author states that in the majority of instances in adults complete emulotion of the diseased tonsil should be performed. Amygdalotomy will not suffice. The best method for complete amygdalotomy is by the galvano-caustic snare. In some cases dissection of the diseased tissue must be performed by properly constructed electrodes. Adhesions between the tonsils and pillars should be removed. In children amygdalotomy has its uses, for here the tonsillar tissue is not as yet pathologic, but in those cases in children, where recurrence takes place after such an operation, the radical procedure should be undertaken.

M. D. LEDERMAN.

Chronic Empyema of the Maxillary Sinus ; Operation and Treatment.—J. A. STUCKY (Lexington, Ky.)—*Louisville Monthly Journal of Medicine and Surgery*, June, 1901.

In operating for chronic empyema, the opening through the canine fossa is advocated. The cavity is entered with a hand-drill or chisel, enlarged with Rongeur forceps until the finger can enter with ease. Granulations and polypi are removed with finger and curette, and partitions, if found, are broken down, so as to make one cavity. The sinus is carefully inspected with the aid of a large ear speculum, in order that nothing escape which might prove a source of infection. The cavity is then packed with gauze. This first dressing is allowed to remain for twenty-four hours, then removed and the cavity washed with an antiseptic solution (boric acid). This is repeated daily for several days.

For retaining the patency of the opening in the canine fossa, plugs made of flexible dental rubber are advocated. After three to six days, when it is no longer necessary to pack the cavity, an impression is made of the opening with dental composition, and a plug made. This should fit accurately the canine fossa, and allow the cheek to cover it comfortably. It should enter the cavity about one-third to one-half inch, curved a little upward and backward. As soon as the composition is hardened sufficiently, it is removed, smoothed up, and given the dentist to model in plaster of paris, and a plug of vulcanized flexible rubber made.

W. SCHEPPEGRELL.

Therapy of Chronic Empyema of the Maxillary Antrum and Our Method of Operating—DR. VICTOR ALSEN, *Archiv. für Laryngologie*, Band XII, Heft 2.

The author begins with a brief description of the numerous operations which have been proposed in this condition, and cites the various drawbacks attending each. At the best, the results seem to be uncertain and unsatisfactory.

The technique of all the usual operations is too well known to call for repetition here, and the method adopted at Gerber's clinic seems to consist of a modification of several previously published procedures.

Following is Alsen's description of the operation:

A general anesthetic is always used. The upper lip is drawn upward with a Langenbeck's hook. Beginning at the level of the canine tooth, an incision is carried from near the median line to about the line of the zygomatic process. The cut must not be made too low, otherwise the mucous membrane will not suffice to cover the alveolar process. After the mucous membrane and periosteum have been pushed aside both upward and downward, and the hemorrhage (frequently severe) is controlled, the antrum is opened with chisel and mallet, and with the help of bore forceps almost the entire anterior wall is removed, with the exception of the infra-orbital border; so that a good view of the antrum may easily be obtained.

Now (with the aid of reflected light), the entire antrum is carefully curetted with a sharp spoon until we are sure that all the thickened mucosa, polyps, carious bone, sequestra and granulations have been removed. The hemorrhage is frequently abundant, but generally stops when the cavity is thoroughly cleared

out. Particular attention must be given to the region about the ostium and the furrow running along the alveolar process, as diseased tissue situated at these points is easily overlooked.

With a curved sharp spoon an opening is now made through the nasal wall into the middle meatus. The little finger of the operator's left hand is carried into the nostril and the opening is enlarged in a forward direction until the tip of the little finger can easily enter it. The edges of the bony wound are smoothed, and shreds of membrane, etc., removed with the sharp spoon, scissors and forceps. For drainage, use is made of a large strip of iodoform gauze which is carried from the antrum through the nasal wound, so that one end serves as a loose tampon from the antrum, while the other projects from the corresponding nostril.

In conclusion, the oral wound is carefully closed with stitches placed close together. We always begin at the external end of the wound, as it is the most difficult part to manage. During the first days after the operation there is a marked swelling of the cheek, which, however, disappears under the application of ice. The patient is at first allowed only cold liquid nourishment, and even this is taken through a glass tube in order to avoid stretching the wound in the mucous membrane. As a rule, the first strip of gauze is removed on the third day. Its reintroduction is easily accomplished by means of a probe bent like an Eustachian catheter. From now on the tampon is removed every day, and the cavity washed out with a boric solution or a weak solution of sublimate. The fluid at first contains clots of blood, pus, etc., but soon becomes clear. As a general thing the oral wound has healed at the end of eight days, and the stitches can then be removed. At the end of fourteen days the tampons may be omitted, and the treatment will consist of daily douches and insufflation of some powder, such as iodoform, dermatol, etc.

The counter opening into the nose is placed in the middle instead of the lower meatus, because a sufficiently large opening cannot be made in the latter situation without destroying the lower turbinal and giving rise to atrophic conditions.

The author is very moderate in his claims for this operation, and calls no case cured until the symptoms of empyema have been absent for $1\frac{1}{2}$ to 2 years. He has had five cures, and several are still under observation; but, while they are at present well, yet sufficient time has not elapsed for a final judgment.

In two cases where considerable caries was present in the walls, the results were not satisfactory, and A. does not recommend the operation for such cases.

The paper closes with the following propositions:

1. None of the operations hitherto employed can in any sense be called radical. Such an one should bring about a complete obliteration of the antrum by cicatrical tissue.
2. Inasmuch as no other method brings about a radical cure, and the after-treatment is accompanied by manifold disadvantages, it would seem that the operation here described is advisable because it attains the end in view more rapidly and pleasantly than the others.

VITUM.

A Case of Sarcoma of the External Auditory Canal.—N. NIZZI

—*Bollett. delle mal. dell' orecchio, etc.*, No. 9, 1901. *Rev. Heb. de Laryng. D'Otol. et de Rhinol.*, Dec. 7, 1901.

From the clinical observation of a case of sarcoma in a boy of ten years, and from a careful analysis of the literature of this subject, the author formulates the following conclusions:

Primary sarcoma of the auditory canal and of the auricle are rare; secondary sarcoma, still more so. Both may appear irrespective of the age of the patient.

Sarcoma, in the early stages, may be confounded with several other affections of the auricular canal, and a correct diagnosis is absolutely impossible without the aid of the microscope. In every case in which we find a so-called polypus of the ear, it is well to make a microscopic examination, as nothing is more deceiving than its macroscopic appearance.

The extension of a sarcoma to the middle or inner ear is not always manifested by exact clinical symptoms, and the prognosis should therefore be guarded.

The prognosis, judging from the cases which have thus far been published is very favorable; however, if a radical extirpation is practiced in the beginning, we may obtain a cure of more or less duration. When a total extirpation is impossible on account of the extent of the neoplasm or general infection, surgical intervention is useless.

When the sarcoma is limited to the auditory canal, the operator should not simply remove the diseased area, but should make a very free extirpation of the surrounding tissues, as the most effective method of preventing a recurrence.

W. SCHEPPEGRELL.

Complications of the Middle Ear.—E. E. CLARK (Danville, Ills.)
—*The Medical Standard*, Nov. 1901.

The author says "the tympanic cavity is a death trap" which catches far more people than many of us suppose. In the entire human economy there is not a single cavity which is of such vital relative importance to its neighboring structures as that of the middle ear. It bears such important relationship to all which lies about, hidden away as it is, deep down in the firmest and hardest bone of the body, that when diseased, it may be as a slumbering volcano or a quick and violently active earthquake. Next to trauma ear disease is most often responsible for brain infection and abscess. Every case of suppuration of the middle ear should be regarded as a serious disease.

ANDREWS.

The Advisability of Early Operative Intervention in Acute Mastoiditis; Report of a Case.—E. B. DENCH (N. Y.)—*M. Y. Med. Journal*, Oct. 19, 1901.

The case reported was one of acute inflammation of the left ear, complicating an attack of influenza in which the acute symptoms, mastoid tenderness and suppuration had ceased when the author saw the case, four months after the attack. At this time the hearing was growing worse, but no pain in the ear or tenderness over the mastoid existed. Catheter inflation was advised. Two months later the patient presented a fluctuation behind the ear, which, on being incised, revealed a pus cavity, with roughened bone at the bottom. There was but slight sinking of the upper part and posterior wall of the canal, in fact no further indications of mastoid involvement than at the previous examination, when a diagnosis of retarded resolution was made.

A typical mastoidectomy was performed at once, and the mastoid cells were found completely filled with granulation tissue. The trabeculae between the cells were found carious, and the tip was soft. Good results followed.

The author takes the radical position, and advises an immediate operation in every case where we have any evidence of mastoid involvement, even if it be simply for the purpose of exploration.

M. D. LEDERMAN.

Some Aural Complications of Influenza.—S. MACCUEN SMITH (Phila.)—*Penn. Med. Journal*, Oct. 1901.

The author states that hemorrhagic otitis is believed to be the distinguishing feature of otitic influenza. Clinically there is a

severe myringitis, hemorrhagic in character, with the formation of bluish-red extravasation, forming dark-colored bullae, which contain a bloody serous fluid. Areas of ecchymosis are also seen in the walls of the external canal.

Mastoid complication, or irritation is present in all severe cases, and the percentage of cases requiring operative intervention is unusually large. Two cases were operated upon by the author of primary mastoid disease in which the tympanic cavity was but mildly involved in the form of a slight hyperemia. In ordinary attacks of acute otitis media the pain is alleviated when escape of the confined fluid has been accomplished. In "grip" otitis, however, the suffering continues for a few days without much relief. This is especially marked when spontaneous rupture takes place instead of a timely free incision of the membrane.

The virulence of an aural discharge cannot be judged by its odor or the gravity of an otorrhea cannot be surmised by its chronicity. Bacteriological examination will indicate the infectious nature of aural discharge.

The part of conservatism is best served in these cases by an early incision of the drum. Antiseptic irrigation followed by gauze drainage, is the treatment advised.

M. D. LEDERMAN.

Notes on Diphtheria.—E. KEN HERRING (Shepparton, Vict.)—*Australasian Med. Gaz.*, Sept. 20, 1901.

With a courage only equalled by his idea of proper economy in the use of antitoxin, the author runs a tilt against a present fashion of medicine, and asks: "The bacillus and the antitoxin are ornamental and useful, but are they necessary?"

To this he replies by pointing out that the more modern textbooks include all membranous inflammations of the fauces, pharynx and larynx under the term diphtheria, and that "the practitioner, therefore, may honestly avoid the time and trouble, and expense of getting a definite diagnosis of the bacillus from an expert, and yet, without injustice to the statistics, report all his membranous inflammations as diphtheria."

His experience shows him that one can get along very well without much antitoxin—at least in the country in Australia, as it is conceded that the disease there is much milder than in England, for laryngeal infection is rare in Australia.

On these grounds he argues for the use, at the beginning, of a less expensive treatment.

This is resorcin swabbing. It is not new, but the author considers that it is not "known aright." He uses a solution of a dram to the ounce of water applied warm with a brush or swab by a nurse or "other strong-minded person." The strength sometimes needs to be doubled, but rarely if thoroughly applied, and is warm. He has treated fifty cases in the last three years in this way without a failure. Antitoxin has been required in three cases only.

He cites eight cases of diphtheria in which the infection was communicated by musical mouth organs to children.

EATON.

Note on the Administration of an Anæsthetic to a Patient with Double Abductor Paralysis.—OTTO F. GRUNBAUM, *Lancet*, March 2, 1901.

Patient, aged 24, was admitted for operation for hematocele. He stated that he thought his heart was weak, as he was breathless on exertion. No disease was found, and the anæsthetic was commenced. The patient took gas well; he passed under the influence of ether, and had nearly lost the cyanosis due to the gas when he ceased breathing. A gag was inserted and his tongue was drawn well forwards, but, no signs of voluntary respiration occurring, artificial respiration was resorted to without delay. Since the pupils continued to dilate while the passage of air into the lungs was accompanied by considerable noise, tracheotomy was suggested, but not performed, because the nature of the puff of air pressed out of the thorax during artificial respiration proved that there was a satisfactory air entry. Five minims of liquor strychnine were injected. Two minutes later the pupils began to contract, and after six minutes voluntary respiration with loud stridor began. Shortly afterwards the patient regained consciousness, and recovered sufficiently to sit in a chair before the fire. He continued to gasp for breath, but showed that he had returned to sense and sensibility by a refusal to inhale any medication. The stridor gradually decreased, and forty minutes later it had disappeared. The following day the patient was feeling quite well. The character of the dyspnea which occurred under anæsthesia suggested some laryngeal stenosis. On questioning the patient further about his breathlessness on exertion, it was elicited that any exertion produced noisy stridulous breathing, and, further, that this difficulty had existed as long as he could remember.

On the 14th Dr. J. B. Ball was asked to examine the patient. He

reported that both vocal cords lay near the middle line, and on deep inspiration approached each other slightly, still further narrowing the glottic aperture. The condition appeared to be that of complete bilateral abductor paralysis. The appearance was not exactly typical, as there was a slight obliquity in the line of the glottic aperture.

The object of recording the case is to add to the list of pathological conditions which may lead to death during the administration of an anesthetic, but which (without exceptional examination) may not give any evidence of their existence during life or on the post-mortem table, however minute an investigation be made

ST. CLAIR THOMSON.

Case of Extirpation of the Larynx for Epithelioma.—GEO. T.

HANKINS (Sydney)—*Australas. Med. Gaz.*, Sept. 20, 1901.

About three months before admission to the hospital, the patient was operated upon for malignant glands beneath the angle of the jaw on the left side. On admission there was pain and difficulty on swallowing, hoarseness and cough. The thyroid cartilage was pushed over to the left. Laryngoscopic examination showed a mass involving the right side of the epiglottis, extending along the aryteno-epiglottic fold and obscuring the view of the interior of the larynx.

Tracheotomy was performed and the administration of the anesthetic continued through the tracheotomy tube. The larynx was plugged with gauze. A transverse sub-hyoid incision was made from one sterno-mastoid to the other, the thyro-hyoid membrane divided, and the epiglottis turned out through the wound. The growth was then brought well into view, and involved the right side of the larynx up to the middle line. The vocal cords were not implicated.

A vertical median incision was then made from the first incision to the tracheotomy wound, and the perichondrium, together with the superficial soft parts, peeled from the thyroid, the superior cornua of the thyroid cartilage divided, and the larynx dissected downwards from the esophagus. The trachea was then divided just below the cricoid cartilage and the larynx removed. The upper end of the trachea was then stitched to the skin and the pharyngeal wound closed by sewing mucosa to mucosa and skin to skin. An opening was left on the left-hand side through which a rubber catheter was passed into the esophagus. Hemorrhage was quite unimportant.

Patient went on well for six days, when pneumonia set in. The violence of the coughing broke down the union between the flaps, leaving a large triangular opening into the pharynx. On two occasions there was cyanosis, the respiration becoming unembarrassed, but the pulse 140. Patient recovered.

EATON.

Does Comparative Physiology Give an Answer to the Question as to Proportional Relation Between Singing Power and the Structure of the Singing Organ?—DR. GEORGE AVELLIS (Frankfort-on-Main), *Archiv fur Laryngologie*, Band XII, Heft 2.

The Laryngoscope gives us no information as to a peculiar laryngeal conformation in the case of singers. In two instances the larynges of well-known singers were found provided with muscles of unusual power, but this is by no means the rule.

The author investigated the singing organs of various birds with a view to ascertain whether those birds which possess a most flexible voice were provided with a larynx that differed widely from that of birds not so gifted. The investigations resulted in nothing definite, and Avellis comes to the conclusion that in human beings the power of singing depends, not on the structure of the larynx, but on the mental and intellectual bent of the individual, and that we have no more reason to expect a special conformation of the larynx of a singer than we have to expect the same in the hand of a skilful player on the violin.

VITTUM.

The Relation of Outdoor Life to High Altitude Therapy.—CHAS. DENNISON (Denver)—*Reprint From Transactions of the Colorado State Medical Society*, June, 1901.

The detail of this paper, by the well known authority on climatology, precludes a complete reflection within the limits of our abstract space. It should be read in entirety. The author makes a strong argument tending to emphasize the beneficent effect of open air as the curative agent in tuberculous conditions; in confined space the climate of Colorado offers no advantages. The loss of oxygen in confined space counterbalances any good mechanical effect from lessened atmospheric pressure upon the blood circulation or upon the respiratory organs. Deficient ventilation is the keynote of the cause, as is out-door living, or perfect ventilation, the keynote of the cure of tuberculosis.

F. C. E.

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BOOK REVIEW.

History of the Diseases of the Pharynx. (*Historie des Maladies du Pharynx.*) By DR. C. CHAUVÉAU, with a preface by Dr. Du Castel. In Three Volumes. Published by J. B. BAILLIERE ET FILS, Paris.

The thoroughness of this work may be understood when it is stated that although limited to the history of only one branch of Oto-Laryngology, —viz., diseases of the pharynx—the three volumes contain a total of 1,328 pages of succinctly written matter!

The author believes that observation is more useful than theoretical dissertations, and, in searching the archives of medical literature, he has carefully selected the most practical records of diseases of the pharynx, giving, in some cases, the full text of the author while in others, of less importance, limiting himself to a short synopsis. The thoroughness with which he has exhausted the literature of the subject makes this work not only a veritable curiosity in medical literature, but also an encyclopaedia of this branch of the subject.

In the first volume is considered the Greco-Roman and Byzantine and Arabian Period, while in the second and third the Arabian, mediaeval and modern, the latter including the Renaissance and the seventeenth and eighteenth centuries. The first is remarkable for the observations made by the Greek physicians in the clinical pathology of this subject, and whose influence was felt by their successors as late as the eighteenth century. In the modern period was first enunciated the real pathological anatomy and in this period the surgery of the pharynx has made its most remarkable progress.

In the third volume, the author has several hundred pages of the Latin text, in which the original words were written. As the Latin used at this period for medical literature is exceedingly simple and without the more complicated syntax of the classics, it makes a valuable addition to this interesting work.

W. S.

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No. 5.

ORIGINAL COMMUNICATIONS.

(Original communications are received with the understanding
that they are contributed exclusively to THE LARYNGOSCOPE.)

DEFORMITIES OF THE BONES OF THE FACE AND NOSE.

BY EUGENE S. TALBOT, M.D., D.D.S., CHICAGO.

Fellow of the Chicago Academy of Medicine.

Much has been written upon the etiology of deformities of the nasal bones, especially deflection of the septum.

Numerous theories have been advanced to account for these deformities. Quelmalz and Schultz believed them due to the action of astringents drying up the membrane, causing it to contract and thus drawing the bone and cartilage down upon itself. In Morgagni's opinion they were due to excessive development of the vomer. Trendelenburg held that they were due to a crowding up of a high-arched palate since he found the two conditions frequently associated. Jarvis, after citing four cases in the same family, suggested the deformities were due to direct heredity. While the neurotic or degenerate states that underlie building up of the system may produce deflection, direct heredity here as elsewhere is rare. Schaus' and Welcker's investigations show that there is a faulty development of the facial skeleton. Bosworth¹ and others have charged septal deformities to traumatism. The clinical history of many cases affords, according to Bosworth, direct evidence of this and even in those cases in which the direct injury is not testified to, he thinks it is safe to say that an injury has occurred though this may have been so slight as not to have excited especial attention at the time of the occurrence. "Injury to the nose need not necessarily give rise to the immediate development of a notable deformity, as in fractures, but it may set up a low

¹ Diseases of the Nose and Throat.

grade of morbid action, which, going on through a number of years, will finally develop a condition by which the normal function of the nose is seriously hampered." The point on which he lays especial emphasis is that deformity is primarily the result of traumatism and secondarily of a slow inflammatory process which results therefrom.

The theories most deserving attention are those of Bosworth and Trendelenburg. In an examination of 11,000 skulls, I found that owing to the fragility of the septum, the whole or anterior part of it was lost in many. But 7,600, therefore, had sufficient remaining to give an idea of its shape; 5,762 of this number showed marked deformities. Deflection of the septum did not extend uniformly throughout. On careful examination of these deformities, it was found that the septum could be divided into three parts, anterior, middle and posterior deflection. While traumatism occasionally may produce deflection in the anterior third of the nose, how it could produce deflection merely in the middle or posterior third of the septum is not very demonstrable.

That deformity and fracture of the septum may, however, be traced to traumatism, I am personally aware. In one case, when a boy of sixteen, I asserted my rights and received a blow upon the nose from my opponent which fractured the cartilage and made a lasting impression upon me. The theory that from 50 to 80 per cent or even 5 per cent of deformities of the septum are due to such injuries is demonstrably illogical. In the large number I examined, 2,684 possessed what appeared to be fracture. The vomer in many of these specimens commenced to deflect at its outer surface and gradually deepened until at about its middle or posterior two-thirds, it reached its deepest part and then gradually decreased in depth until the posterior attachment was reached. Its appearance was not unlike the sail of a ship. On the convex surface, in many cases, nature had thrown out provisional bone to support this curvature, which might be considered a break, but in most cases simply a bend. That a blow, whether slight or as powerful, could produce a fracture of the vomer, the greatest deformity of which is located from .75 to 2 inches inside the nose from the point of the nasal spine seems hardly probable. Anterior and posterior to this deflection, the vomer appeared in most cases to be nearly or quite normal. In nearly every case of fracture would involve only one-half of the vomer, the other simply bending; that

such a condition could be brought about by a blow is absurd. It seemed the greatest deformity was the thinnest part of the bone.

It would appear to be a very easy matter in the skull to decide whether a fracture had taken place before or after complete ossification by the character of the wound, thus approximating the date of the injury. That it was caused by a low form of inflammation set up as a result of a slight injury in utero or after birth does not seem rational since the inflammatory condition must necessarily extend upon both sides of and through the septum extending its entire length. If due to an inflammatory condition the bend or break would be found at any part of the septum and the position and shape would be different in every case. As the location upon the septum from above downward is nearly always the same and as the shape is always from before backward, inflammation could not produce it. In order to produce a fracture, there must be excess of septum. Therefore, unless the fracture is the result of a direct blow it would require years for sufficient growth and curvature to produce a condition in which fractures or even an abrupt bending could take place.

The theory that deformity is "primarily" the result of traumatism due to injury in utero or at the time of delivery or even subsequently, except by direct force and secondarily to a slow inflammatory process, will, therefore, not account for these deformities.

A theory much in favor is that of Trendelenburg. That these deformities are "due to a crowding up of a high-arched palate.

A hypothesis to be accepted must not only explain all the facts, but must exclude all other explanations. A high contracted vault or "arched palate" is never seen with the first set of teeth. Deformed palates never begin development until the sixth year and development is always completed by the twelfth. Deflected septa are often observed before the sixth year. It is necessary to settle what constitutes a high, contracted arched palate. The height of the vault must be measured to find out wherein they differ. This measurement is taken at the gum margin with instruments (Fig. 1) between the second bicuspid and first permanent molar to a point at the median line of the vault. In measurements of 4,614¹ normal jaws, it was found that lowest was .21 of an inch, the highest .84 of an inch, with an average of .58 of an inch. In brachycephalic

¹ Mouth-breathing not the cause of contracted jaws and high vaults. Dental Cosmos, November, 1891.

white heads with large jaws and normal dental arches, the vault varies in height from .37 inches lowest, to .68 inches highest. The

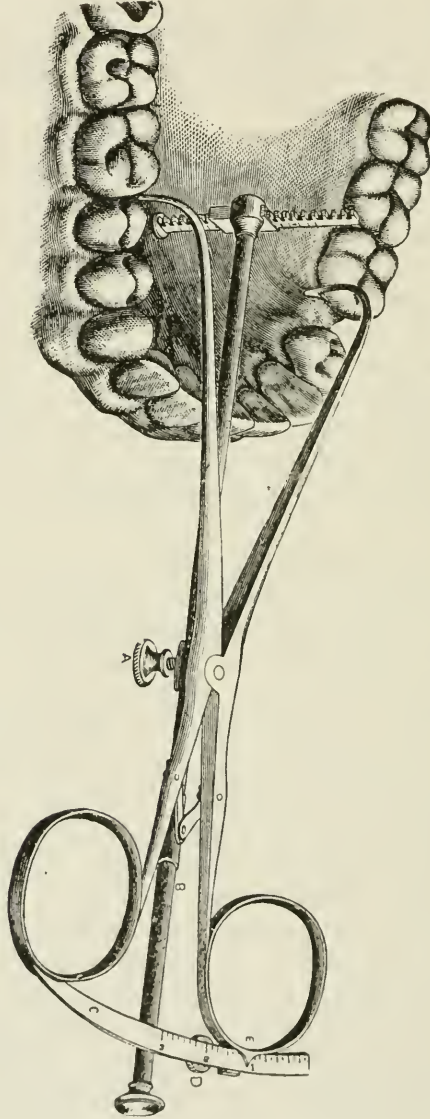


Fig. 1.

colored varies between lowest .50 inches and highest .75 inches. The mesocephalic white varies between .31 lowest and .68 inches highest; the colored between .50 lowest and .62 highest. The

dolichocephalic white varied between lowest .62 and highest .81; the colored between lowest .56 and highest .68.

The average height of brachycephalic vaults white is..... .54

The average height of brachycephalic vaults colored is..... .61

The average height of mesocephalic vaults white is..... .52

The average height of mesocephalic vaults colored is..... .60

The average height of dolichocephalic vaults white is..... .74

The average height of dolichocephalic vaults colored is.... .62

The height of vaults in V-shaped arches varies between lowest .71 and highest .84. The average is .55. The height of vault in saddle arches varies between lowest .71 and highest .84. The average is .60. The height of vault in semi-V and semi-saddle arches varies between lowest .75 and highest .84; average .56.

Fifty-eight one-hundredths of an inch being the average, it is evident that in the deformed vaults, there is a difference of .02 of an inch only in either direction. In the extreme brachycephalic and dolichocephalic there is but .06 of an inch. In twenty-four

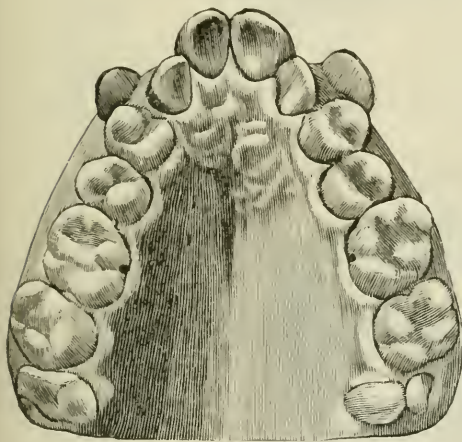


Fig. 2.

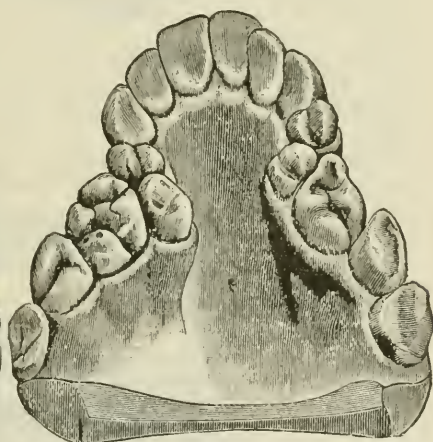


Fig. 3.

mouth-breathers, the lowest measurement was .42; highest .75, with an average of .61. While the average is .03 of an inch higher than the average normal vault, the highest vault of mouth-breathing is .10 inches lower than the highest normal vaults. The deception as to height is due to contraction of the dental arch.

In order to classify the various forms of deformed jaws, 3,000 plaster casts were used. A palate may be high and broad, high and narrow, high and deformed. The palate could be low and broad, low and narrow and low and deformed.

Two forms of deformed dental arches and vaults were specially noticeable. The V, (Fig. 2), and the saddle (Fig. 3). All other forms were modifications of these two. There is also hypertrophy of the alveolar process partial or complete. The vault, however, is never involved. (Fig. 4). It is claimed that in mouth-breathing

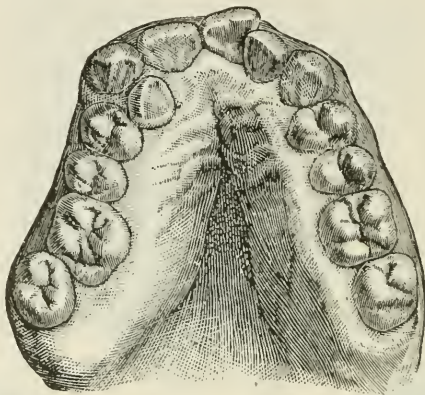


Fig. 4

the muscles of the cheeks press against the sides of the jaws, carrying the jaws and teeth inwards (producing these deformities) and

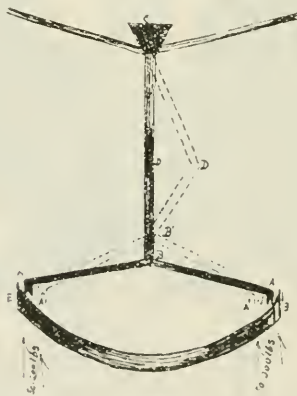


Fig. 5. After Wright.

vault upwards (Fig. 5) in this manner crowding the septum to the right or left.

In the V-shaped arch, commencing at the first permanent molar, there is gradual narrowing of the dental arch and alveolar process toward the median line, where the incisors approximate a V-point, or may stand in normal position to each other. Invariably

there is protrusion of the teeth and alveolar process, not of the jaw. In the saddle-shaped arch the bicuspid are carried inward and the deformity is invariably situated between the first permanent molar and the cuspid. Unlike the V-shaped variety, the anterior teeth and alveolar process never protrude in this class of deformities. The contracted hard palate is always associated with the V-shaped variety, in most cases extends backward to the second bicuspid, and is never seen with the saddle-shaped variety.

The vault commences to slope slightly from the neck of the incisor until it reaches an imaginary line drawn across the roof of the mouth from the right first bicuspid to the left first bicuspid, here it slopes gradually or abruptly upward until a point is reached central and vertical to a line drawn across the jaw from crest to crest, between the second bicuspid and first molars. From this point posteriorly to the soft palate, the dome is usually nearly level and parallel with the plane of the alveolar crests of the bicuspid and molars when it gradually slopes and unites with the soft palate. Occasionally there is slight depression and sometimes corresponding slight elevation. There are so inconsiderable as to escape notice unless careful examination be made.

In mouth-breathing, the lower jaw usually drops just sufficiently for the passage of the same volume of air which would pass through the nasal cavities when in normal condition. (Fig. 6.) Each open-

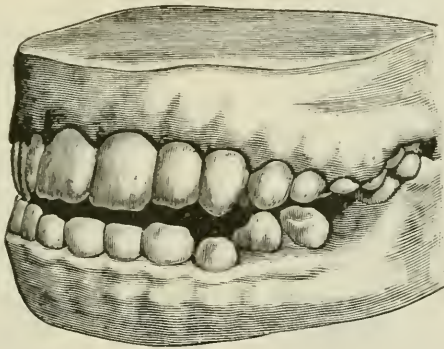


Fig. 6.

ing is equal to about one-half an inch in transverse area. Old people often sleep with the mouth open and to the fullest extent. These deformities of the jaws and teeth never occur after eruption of the teeth about the twelfth year.

On opening the mouth there is sense of tension of the orbicularis oris, but not of a pressure of the buccinator, no matter how

widely the mouth may open. This muscle is always passive, except in the act of blowing or eating. Contraction during sleep is out of the question. As the buccinator muscle extends anteriorly to the first bicuspid only, it cannot be productive of the V-shaped variety of deformity in which is also found the contracted vault. Therefore, the only deformity that can be so produced is the saddle-shaped variety. The orbicularis oris muscle cannot produce the contraction, since when the mouth is open the pressure, if any, on the six anterior teeth, is backward. The teeth would thus be carried in the opposite direction from that which must be taken to produce this deformity. The pressure is just as great upon the incisors as upon the cuspids, thereby holding them in place. More force is exerted by the orbicularis oris upon the six anterior teeth when the mouth is open than could be exerted by the buccinator muscle, which would tend to hold the anterior teeth in place. Apices of teeth rarely move when pressure is brought to bear upon their crowns for the purpose of regulating them. Teeth, like the cuspids, having long roots, are hence liable to move than teeth like the lateral incisors or bicuspid, with short roots. Since on moving a tooth the greatest change takes place at the neck, the greatest absorption and deposition of bone must occur at that point. The roots of the cuspids are larger and longer than those of any other teeth. Unlike other teeth, the tooth germs are situated considerably higher and farther toward the outside of the alveolar process, hence when they come closely into position they diverge from the apices to the crowns. All other teeth stand nearly or quite perpendicular, hence the roots of these do not influence the hard palate. The first permanent molar and the teeth posterior to it are never involved, except from local causes. The center of the buccinator muscle in both directions is located at this tooth. How, then, since all the teeth are covered by the muscle upon one side, could half be carried inward and the other half remain normal?

Were mouth-breathing the cause of the contraction, both sides should contract alike and the deformity be uniform upon both sides. This is never the case. Then the first permanent molars would be carried inward, which rarely ever occurs. The want of uniformity of the two sides is easily recognized. Muscles cannot contract to a degree sufficient to induce the pressure necessary to produce a deformity. Pressure of the contractile tissue upon the crowns of teeth is not sufficient to affect the alveolar process through the roots of the teeth. Even could it modify that spongy structure, its

force must stop there and not extend to the osseous vault, and result in bending it out of shape. In most cases the diameter of the superior maxilla, its alveolar process and teeth is less than that of the inferior maxilla, alveolar process and teeth. This is always the case in the worst forms of dental irregularities. In such cases, the muscles and cheek could not press upon the teeth and alveolar process of the upper jaw.

The changes which take place in the bone are not a bending in at one place and a forcing out at a weaker point to compensate for the space lost, but an absorption and deposition of bone at the point of pressure. Even if these last conditions were the case, the strong pillar of bone (the anterior alveolar process), situated at the very point of contraction of the alveolar process, would constitute a strong bulwark for resistance to the pressure, which is suppositiously acting at a distance from the center of the vault. It would be equally impossible to produce sufficient pressure from without out to break the dental arch as to break by the weight of a building the arch of a door or window. The tongue exerting much greater force in the act of swallowing, would prevent inward movement of the teeth, were the slight pressure from the cheek muscles the cause of the deformity.

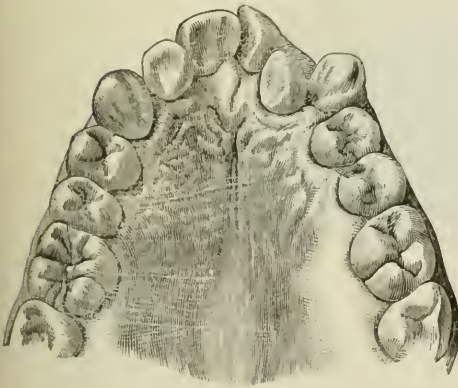


Fig. 7.

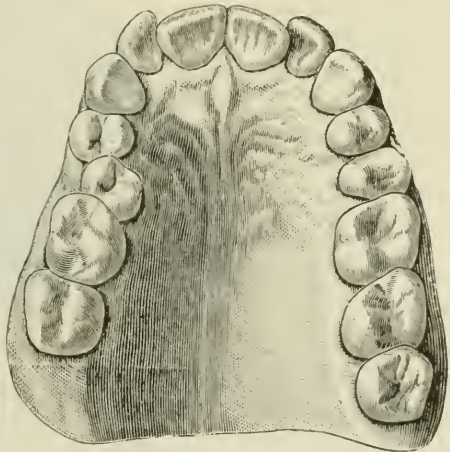


Fig. 8.

Were it possible for the buccinator to produce this contraction, modification of the osseous structures must be uniform. This would shut out the semi-V-shaped (Fig. 7) and semi-saddle-shaped arches entirely (Fig. 8) and a majority of other irregularities of

the teeth in which there is bi-lateral asymmetry. The bi-lateral muscle cannot act on one side while that on the opposite side remains passive. Partial V-shaped (Fig. 9) and partial saddle-shaped

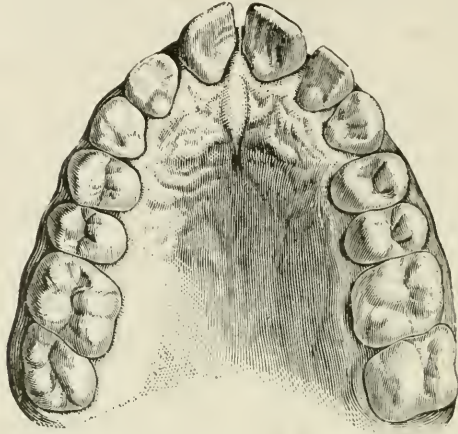


Fig. 9.

(Fig. 10) arches render the theory still more untenable. In these varieties sudden bends inward occur where but one or two teeth

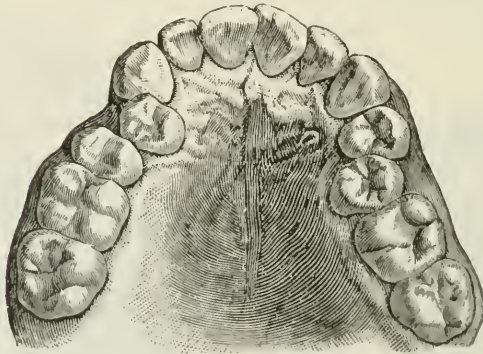


Fig. 10.

may be involved. These aberrations could be produced only by centralization of force on one given point or fiber of muscle. Since the muscle is penniform in shape, it is impossible for one or two fibers of the muscle to exert their influence upon a bicuspid. (Fig. 11.) It would naturally lap two or more teeth. Lastly, the buccinator acting as all voluntary muscles do, uniformly throughout its extent of contraction, must be just as efficient below a median bisecting line in producing a narrow contracted arch as in its up-

per portion. Therefore, the lower maxilla should be contracted whenever the upper one is. This is a decided impossibility. A V-shaped arch can never occur upon the lower jaw were the teeth to articulate normally since these teeth strike inside of the upper and are thus prevented from moving forward. A saddle, partial saddle or semi-saddle arch may occur on the lower jaw, but these deformities are not often seen. When they do occur, they are the result of improper occlusion with the teeth of the upper jaw. In

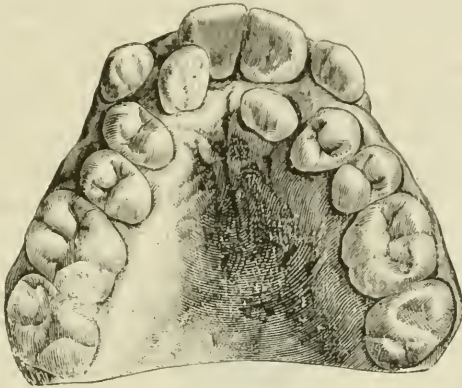


Fig. 11.

semi-V and partial V-shaped arches, the alveolar process is always contracted upon the side of the deformity. If one side of the arch be contracted more than the other, the alveolar process contracts in proportion to the amount of deformity; the vault on that side is not carried up beyond the other side, which is normal. In the saddle, semi-saddle and partial saddle-shaped arches, the alveolar process is built up about the teeth in precise conformity to the nature of the shape of the arch. If three thousand models of the upper jaw be arranged in groups according to the forms here represented and the arrangement of the teeth in each group examined very closely, no two will be alike in either group. An external force acting upon the jaws from the outside could hence not possibly be a cause. Were that possible, all models of one variety would have a definite type.

On examination of twenty-four mouth-breathers, ten were found to have normal dental arches, one V, eight partial V, and three semi-V, and two semi-saddle, one of which was the result of hypertrophy of the alveolar process: The relations of the teeth to each other in deformed dental arches, therefore, are such that no one familiar with mechanical laws can accept such a theory. Pres-

sure as applied by the cheeks and lips could no more break a dental arch than a given amount of pressure break an arch of brick or stone. Those who advocate the theory of the vault being carried upward and causing deflection of the septum are certainly not familiar with the laws of mechanics nor with the anatomy of the structure under discussion.

Were it possible for the muscles of the cheeks to carry the dental arch inward, how could it affect the vault? In the first place, the movement of the teeth in the alveolar process is due to an inflammatory action producing halisteresis, Volkman's perforating canal absorption, and osteoclast absorption. There is no bending of bone in any direction in these cases. Again were it possible for the muscles of the cheeks to bend the teeth and alveolar process inwards, what effect would it have upon the vault? The thick anterior alveolar process together with the dense smooth bone in the anterior floor of the nares built like an inverted double arch with the superior maxillary bones, which form the outer walls of the nose, (Fig. 12) must convince the most skeptical that it is never

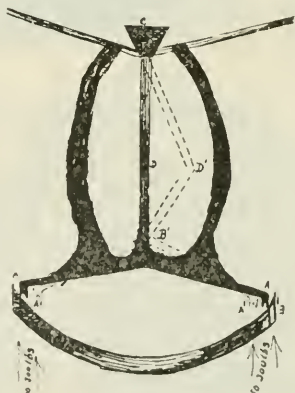


Fig. 12

pushed upward from any cause, since a larger arch is pushing against two smaller heavier arches, the two halves of the maxillary bones. To an engineer mechanic force exerted in either direction would produce no effect. There must be another cause for the deflected anterior third of the nasal septum. The greatest contraction of the dental arch is in the bicuspid region, which would naturally influence the middle third of the septum. Since the facial surfaces of the right and left superior maxillary bones form the anterior surfaces of the nose reinforced by the lower borders of the

orbit, and the malar processes, any amount of force exerted on the alveolar process and teeth could not be exerted through these walls to influence the middle third of the septum. There being no contraction of the alveolar process at the second and third molars and very little if any at the first molar, relationship with the posterior third of the septum is out of the question.

The development of the vault can be studied from an examination of the thirty-six model drawings, given elsewhere.¹

A ridge is sometimes observed extending from the anterior alveolar process along the entire length of the suture. This may be located entirely at the middle third. This ridge takes different shapes. (Fig. 13.) Sometimes grooves (Nos. 2 and 3) are observed upon either side of the depression. These grooves have been charged to ossification of the vomer, producing rigidity of the suture and the bone upon either side is afterward carried up.

According to Clouston, "Those palates where the deformity consisted in a ridge down the center antero-posteriorly, seemed to show that in them the deformity took place at a later period than in the other deformed palates. When the nasal septum was getting stronger and kept the center of the palate down, while on each side of it the palate was drawn up, making two vaults side by side, instead of one."

The amount of resistance in a triple arch, each fortified by the other, (Fig. 12) to say nothing of the heavy suture and thick, hard palate bracing it, would certainly suggest to any analytic mind the impossibility of such a theory. The vomer ossifies about puberty, the maxillary bones usually early in life. It seems strange that a thin, cartilaginous structure can be considered in connection with either pulling or pushing since the least deviation from a straight line would preclude such a power. These depressions are observed in vaults where the vomer is straight. They are found in lengths of from one-half to one inch in modern skulls and individuals as well as in ancient. Did the septum carry the vault down as suggested by Clouston, a like depression would be observed in the floor of the nose. In 1,367 skulls with this deformity, the floor of the nose and the connection of the septum were always smooth and evenly developed throughout its entire length. These projections are developed as early as the second year, while the vomer frequently remains unossified until eight or ten years of age, and in some cases much longer.

¹Talbot, *Osseous Deformities of the Head, Face, Jaws and Teeth*.

Deformed septa are found in the early races who never have contracted high vaults. Theile, in 117 skulls, found the septum normally placed in twenty-nine. Semeleder in 49 found 35 deflected. Harrison Allen in 58 found 40 deflected. Mackenzie in

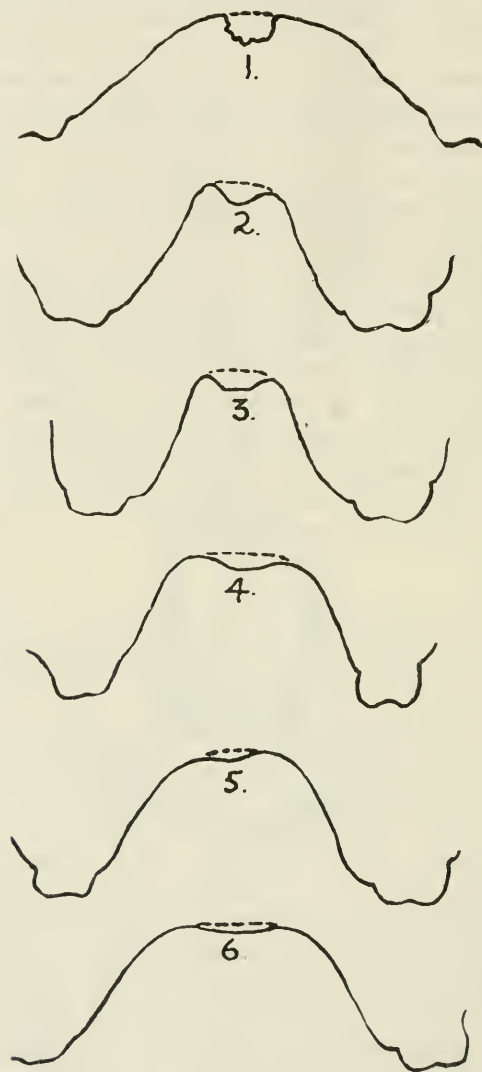


Fig. 13.

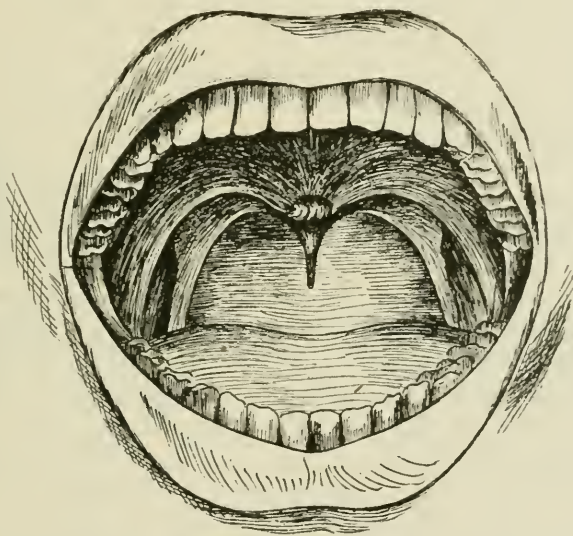
2,152 found 1,657 septa deflected. Zuckerkandl in 103 found 24 deformed. Harrison Allen found 21.5 per cent of 93 negro skulls deformed. Of 687 ancient Peruvian skulls, 147 possessed deflection.

In 67 stone-grave Indians, 34 were deformed. In 18 moundbuilders 10 were deflected. Of 6 California Indians 2 were deformed. Of 28 skulls of ancient Hawaiians, deflection of the septum was noticed in 23. Some in the anterior third, some in the middle third and others in the posterior third. This array of evidence in normal vaults and jaws conclusively destroys the theory that high vaults and contracted arches is a cause.

SUPERNUMERARY UVULA.

BY JOSEPH MULLEN, M. D., HOUSTON, TEX.

The patient in whom the above condition of supernumerary uvula was present, was a male negro, 25 years of age, well developed, and in apparently good health.



A small fish bone was removed from a follicle in the left tonsil; otherwise the parts were devoid of inflammation.

A NEW FIELD OF HEARING CHART.

BY DERRICK T. VAIL, M.D., CINCINNATI, O.

The functional hearing tests now in vogue are woefully deficient in enabling us to quickly estimate the exact status of audition.

It is next to impossible with the means now at hand for many of us to know in a quick or even in a pains-taking way just what the hearing power of a case is. We use the watch, the low audible voice, the forced whisper, the acoumeter, the tuning fork, the Galton whistle, bone conduction, air conduction, Rinne, Weber, Bing, Schwabach, Gelle, etc., etc., and after spending a prodigious deal of time, energy, thought and care, we are quite at sea as to just what the hearing power is. The various tests entail the expenditure of a great deal of time, and much record keeping and during the rush and tension of a busy practice we are prone to go through the motions after the first test and promise a more thorough testing the next time the patient calls.

I found in my own practice that it was a burdensome task to sit down and unravel the repeated records of a given case and felt the need of a graphic method of recording the tone limits so that all that would be necessary would be to glance at the record and at once have good conception of what my previous tests revealed.

This new and entirely original chart has been in active operation in my office during the past year and has been of service in the rapid comprehension of my patients' hearing power.

The chart, as you will observe, is fashioned somewhat after Bezold's, although less bulky and more graphic. It is built upon the musical scale, having the bass and treble clefs in their proper position in the normal range of hearing. There are about eleven octaves, beginning with the lowest possible note perceptible to the human ear, viz: C_2 in the sub-contra octave (Helmholtz of 16.5 vibrations, and ending at g^8 , the highest perceptible tone, having about 50,000 vibrations.

From the lowest tone to C^5 the notes are elicited by the tuning forks and from C^5 to g^8 inclusive, the notes are from the New Galton whistle. These instruments are in the Bezold's set made by Edelman of Munich, but any set of whistles, rods or tuning forks, which will accurately deliver the desired tones, will answer in de-

HEARING CHART.							
NAME		DATE			RECORD No.		
		RIGHT EAR			LEFT EAR		
OCTAVES	Note Vibration per Second	DATE	DATE	DATE	DATE	DATE	DATE
8 TIMES ACC'D OCTAVE	G ⁸ 48505						
	F ⁸ 44193						
	E ⁸ 41309						
	D ⁸ 37162						
	C ⁸ 33091						
7 TIMES ACC'D OCTAVE	B ⁷ 31244						
	A ⁷ 26240						
	G ⁷ 24066						
	F ⁷ 22096						
	E ⁷ 20656						
6 TIMES ACC'D OCTAVE	D ⁶ 18581						
	C ⁶ 16545						
	B ⁶ 14624						
	A ⁶ 13120						
	G ⁶ 12401						
5 TIMES ACC'D OCTAVE	F ⁵ 11008						
	E ⁵ 10847						
	D ⁵ 9876						
	C ⁵ 8272						
	B ⁵ 7842						
4 TIMES ACC'D OCTAVE	A ⁴ 6560						
	G ⁴ 6220						
	F ⁴ 5524						
	E ⁴ 5223						
	D ⁴ 4645						
THREE TIMES ACC'D OCTAVE	C ⁴ 4226						
	B ⁴ 3188						
	A ⁴ 2112						
	G ⁴ 1584						
	F ⁴ 1456						
TWICE ACC'D OCTAVE	E ⁴ 792						
	D ⁴ 523						
	C ⁴ 364						
	B ⁴ 244						
	A ⁴ 148						
UNALTERED OCTAVE	G ⁴ 132						
	F ⁴ 96						
	E ⁴ 72						
	D ⁴ 54						
	C ⁴ 42						
CONTRA- OCTAVE	B ³ 33						
	A ³ 24.75						
	G ³ 16.5						
	F ³ 12.375						
	E ³ 9.25						
OTHER TESTS and REMARKS							

termining the auditory limits. Tone is one thing and intensity is an entirely different thing. Unfortunately, there is not at present any instrument or set of instruments that will produce the same intensity of tone throughout the scale, so that we are readily deceived and easily misled in determining just what the ear hears. The same note delivered with light intensity frequently produces no sensation of hearing, while of high intensity is easily heard.

It will be noticed by looking at the chart that the musical scale occupies rather a low position in the range of possible audition, being in fact entirely within the lower half. In other words, there are many more notes above the treble clef that can be heard by the normal ear than there are notes below the bass clef that can be heard.

The conversational voice scale—that is, the scale above which or below which no human voice talks in ordinary conversation, corresponds nearly to the musical clefs. No one, even with a deep gruff voice, talks on a lower note than C, in the bass clef, great octave and no one, even with a high piping voice, talks on a note higher than g^2 just above the staff.

It will be seen from this that the lower half of the auditory range is of much greater practical value than the upper half and it is known by us all that this is the very part of our auditory power than suffers in ordinary catarrhal otitis media.

The loss of the high notes is of no practical importance from the patient's standpoint, but is of great value and interest to us as physicians in determining the progress of the deafness and in estimating the prognosis.

There is a place at the top of the chart for the name, date and record number, also spaces for repeated tests occupying the major part of the space on the right. The notes and the number of vibrations per second necessary to produce each are indications in their proper places. In getting the hearing power, I always use the notes of low intensity—as loudly struck forks emit sounds of no diagnostic value. When the lower tone limit is found, I make a dot on the line or space on the chart corresponding to the note and do the same for the upper tone limit. The intervening tones are gone over in search of islands of hearing or gaps and black lines drawn connecting the dots, thus giving a graphic record of the hearing. After inflation or massage, the tests may be repeated to ascertain the improvement or loss and drawn in red alongside the black. Below is a blank space for recording the watch, voice and conduction tests.

It is of interest to note that many of the so-called deaf mutes can really hear quite well in the upper or whistle scale, but can hear nothing in the clef scales or conversational scale.

In presenting this modest effort to the Society, I feel that I must apologize for not bringing out something really complete in itself, but feel justified in the belief that this field of hearing chart which I designed, is a step toward a better and more comprehensive method of making and recording hearing tests.

THE NOSE AND THROAT IN THE HISTORY OF MEDICINE.

BY JONATHAN WRIGHT, M.D., BROOKLYN, N. Y.

(Continued from page 280.)

This at present, of course, does not by any means exhaust the list. In fact the special literature dealing with the nose and throat has now become of such enormous bulk that it is impossible for any one man to peruse anything more than a small part of even the most important books, essays and reviews.

Text books as we have seen were rapidly issued and grew quickly from small brochures, their first editions, to the respectable volumes of Türck, Cohen, Fauvel and McKenzie. Of late years the exhaustive composite works, of which Heymann's Handbuch is the most striking example, are monuments of intellectual activity and restless endeavor. In every encyclopædic work on general medicine or surgery, laryngology and rhinology occupy a relatively large number of pages. Since Friedrich's casual remark our knowledge of the diseases of the upper-air passages has increased enormously, and the literature of the subject still more so.

Text Books

America claims precedence in the formation of special laryngological societies. The New York Laryngological Society began its sessions in 1873, which, however, were gradually discontinued, and the organization of a throat section in the Academy of Medicine in 1885 practically took its place. The American Laryngological Association held its first meeting in 1879 under the presidency of Louis Elsberg. The International Medical Congress of 1881 established a section for laryngology and rhinology. Other special societies were formed throughout the world somewhat later. Since 1888 they have existed in abundance, but still have a tendency to multiply. Thus was the art of laryngoscopy and the science of laryngology spread throughout the principal countries of the civilized world.

Laryngological Societies.

We may now take notice of the great strides immediately taken in the knowledge of the various phenomena of disease of the upper-air passages.

No subject so immediately engaged attention as that of laryngeal tumors. Forming striking pictures in the laryngeal mirror, causing marked and distressing symptoms, capable of immediate relief by means of instruments under the guidance of the laryngoscope,

Laryngeal Tumors.

and last, but by no means least, affording the operator a chance to display in the most brilliant manner his newly acquired skill, the larynges of the civilized world were soon swept so clear of benign neoplastic excrescences, that one is to-day almost tempted to account for their present rarity by supposing the early laryngologists even removed the tendency to their formation. And yet even here we are able to go far back in the history of medicine, and note not only the observations of laryngeal tumors post-mortem, but even their extraction per vias naturales.

Marcellus Donatus* in a vague way doubtless referred to laryngeal growths in the early part of the seventeenth century when he spoke of warts in the throat, fauces and root of the tongue. He says they are rare, but occur at times. Edward Tyson† in 1627 wrote of having diagnosticated a polypus of the bronchi and trachea from the expectoration of fleshy masses by a young man, but he was not able to obtain an autopsy to confirm his diagnosis, and it is not certain he did not observe fibrinous shreds.

Haller‡ refers to a case of an ulcerous tumor of the epiglottis and "three scirrhus and round tubercles seated between the membranes" of the uterus. The epiglottic tumor was of such a size that wonder was expressed that the woman had not died. We may suppose it was an epithelioma.

Lientaud in the middle of the eighteenth century recorded § observations of two cases post-mortem, in which laryngeal polypi had caused death.

"A laryngeal polypus which Levret could not ligate with his instrument, G. Köderik, a surgeon in Brussels, ligated with much ease by means of an instrument which was constructed out of a row of hollow balls. This flexible instrument may perhaps be very useful in certain cases in which the stiff catheter renders no aid." ||

John C. Cheeseman, in 1817, was doubtless the first in America to describe ¶ a laryngeal growth. His is the earliest illustrations of such a growth with which I am familiar. It was a case of papilloma of the vocal cords, dying without relief. Albers remarked ** in 1834 that "tumors in the cavity of the larynx belong to a class

The First
Intra-
laryngeal
Operation.

* "De Historia Medica Mirabili," Lib. III, Cap. V, 1613, p. 243.

† "Acta Medica Thomæ Bartholini," Lib., V, p. 94.

‡ "Pathological Observations," 1756, Obs. VIII, p. 14.

§ "Historia Anatomica Medica," 1767, Vol. II, p. 297, Obs. 63 and 64.

|| This is as explicit a reference as I can find to the first authenticated case of intra-laryngeal operation for a neoplasm. Herbinaux' report in the "Journ. de Med.," Paris, 1770, not being at my disposal, I have it from Lewin's "Deutsche Klinik," No. 13, March 29, 1862, who himself quotes it from Richters "Chirurgische Bibliothek."

¶ "Transactions of the Physico-Medical Society of New York," Vol. I, p. 413, 1817. Case of a remarkable disease of the larynx and trachea, with a plate.

** "Journ. der Chirurgie und Augenheilkunde," 1834, No. 21, Heft, 4.

remarkable alike for their rarity and their characteristic symptoms," and in 1837 Trousseau and Belloc could only report from literature and their own experience seven cases.

Cheeseman's case is omitted from Ehrmann's otherwise apparently complete list of the observations which had been noted up to the date of the appearance of his work in 1850,* including his own two cases, 31 in all. He also reported two cases of laryngeal polypi in horses and three in cows. Ehrmann said something of the structure of laryngeal polypi, dividing them histologically into fibro cellular and polypoid excrescences, these latter including what we call papilloma.

Shortly after Ehrmann's paper Horace Green † published a work on the subject. He there speaks of having removed, by means of a knife and a bent tenaculum, a laryngeal polyp from a child of eleven, which he could see by forcible depression of the tongue. He boldly and quickly cut the tumor at its base, certainly a very skillful operation under the easily imagined circumstances. It must of course have been a pedunculated tumor, springing from the upper part of the larynx in a very tractable patient. In another case, that of a man, he used a sponge probang and cauterized the base of what was evidently a polyp. Still another growth which was probably malignant was partly removed by knife and tenaculum.

Middeldorpf ‡ succeeded, by means of an incandescent platinum wire loop, in removing in 1853 a polyp which he supposed sprang from the upper part of the larynx. The tongue was forcibly pulled out by a sharp hook, and the tumor was encircled with the wire by means of the fingers. He at this time was able to cite 64 cases of laryngeal polypi before his own. A few only of this number had obtained relief by operative interference, yet some of these as we have seen, were extracted per vias naturales before the days of the laryngoscope. Nevertheless, this was very exceptional and when we realize that Ehrmann spoke the truth in saying, "Polypi of the larynx, left to nature, become sooner or later the cause of sudden death," we are able to appreciate what laryngoscopy did for these sufferers.

Immediately laryngological literature abounded in reports of the diagnosis, *intra vitam*, of this morbid condition. Lewin, in 1861, declared§ that he had, thus far, seen fifty to sixty cases of laryngeal neoplasms, and that they were present in five or six per

The First Intra-laryngeal Operation by the Aid of Laryngoscopy.

* C. H. Ehrmann: "Histoire des Polypes du Larynx," 1850.

† "Polypi of the Larynx," 1852.

‡ "Die Galvano-Cautik," 1854, p. 222.

§ "Allgemeine Medizinische Central Zeitung," Oct. 12, 1861, p. 654.

cent of all cases of laryngeal affections. He had operated on seven of these, three by cutting operations and four by caustics. Subsequently* in an exhaustive paper he pictured forceps and laryngeal and cautery electrodes. He there states he operated on his first case July 20, 1860, and upon his second case in November, 1861. We must, therefore, conclude so far at least as certain publications indicate it, that Lewin was the first to attempt the extirpation of a laryngeal growth under the guidance of the laryngoscope. Von Brun's title allotting to himself the credit of the first operation therefore is misleading†, though of course he probably knew nothing of Lewin's publication. It nevertheless gave rise to considerable controversy. After long training of his brother's throat, he succeeded in removing a growth from his larynx by means of a forceps. In another work‡ in 1865 he was able to report sixteen cases operated on in various ways.

In 1866, Elsberg published§ a pamphlet on the subject. It was a work of considerable merit, with some very good plates of the microscopical appearances of papilloma, and 'less good-colored plates of laryngeal growths, *in situ*.' In 1867, J. Solis Cohen reported|| the intralaryngeal removal of a polyp.

The laryngeal knife, which of late has been discarded as a very dangerous instrument, was the favorite weapon of these early operators,¶ who, we may suspect, did not always report their mishaps with it. V. Bruns, however, invented a number of other devices for his work.

So rapidly did the observations of these growths multiply, that by 1871 one man was able to report from his own experience 100 cases. In this year Morell McKenzie published his essay on "Growths in the Larynx," which he differentiated into papillomata, benign epithelial growths, fibromata, fibro-cellular or mucous polypi, myxomata, spindle-called sarcomata, cystic tumors, adenomata, angiomas. He pictured various intralaryngeal instrument of his own invention, among them his laryngeal forceps, and the devices of others. His observations began in 1862, and in eight years he had seen 100 cases himself, and he was able to collect the reports of 189 cases by others, published since the introduction of the laryngoscope, ascribing the first case to Lewin, in 1860.

* "Deutsche Klinik No. 12," 1862, ff.

† "Die Erste Ausrottung eines Polypen in der Kehlkopfhöhle," von Victor V. Bruns, 1862.

‡ "Die Laryngoskopie und die Laryngoskopische Chirurgie"

§ Laryngoscopic Surgery, illustrated in the Treatment of Morbid Growths within the Larynx, being the prize essay to which the American Medical Association awarded the gold medal for 1865.

|| Am. Jour. of the Medical Sciences, April and October, 1867.

¶ Vid. "Über Kehlkopfbildungen," Archiv. der Heilkunde, von Dr. Otto Prinz, p. 193 1866.

Many observers treated them by applications of caustics, but this method soon found its proper field of therapy. It is interesting to note in the table of Fauvel,* that he had, up to 1876, seen 300 cases of laryngeal neoplasms, beginning in 1862, when he saw eight, and reaching the lightest figure in 1873, when he saw 40 cases. To the modern observer, even in our largest hospital clinics, these now seem fabulous figures. The rapid differentiation of these growths is to be noted in both McKenzie and Fauvel's works. Lefferts† was able, in 1876, to diagnosticate and operate on a case of eversion of the laryngeal ventricles, cases having been previously observed by McKenzie (l. c.) and Moxon.‡

Eversion of the
Laryngeal
Ventricles.

We have seen that Schneider, Santorini, and Haller had fully described, under a different name, the pharyngeal tonsil. Occasional reference to the structures in the naso-pharynx is to be found in prae-laryngoscopic literature. Thus Luschka§ refers to Mayer as describing, in 1842, the lymphoid tissues in the naso-pharynx as a bursa, and Tourtual had spoken of it as the superior sinus of the fauces. Luschka more accurately described the vault as, "not smooth, but distinguished by numerous larger and smaller depressions and protuberances, and occasionally by a complete labyrinth, made of round or ovoid channels. This appearance of the vault depends upon the existence of many simple and clustered lymph glands," which are arranged in a manner similar to the faucial tonsil. Later, in another publication,|| he described the pharyngeal tonsil more particularly, and proposed that name for it.

The Pharyn-
geal Tonsil.

Henle¶ spoke of depressions and blind dilations in the mucosa, little cavities here and there to be found in the mucous membrane of the naso pharynx. He admitted the existence normally of Mayer's "Bursa Pharyngea." Such a conception led much later to the exaggeration by Tornwaldt of these occasional pathological conditions into a constant factor in the etiology of post nasal catarrh, his configuration of the tissue being still known under the name of "Tornwaldt's Disease"**. While it is possible that the cases observed by Loewenberg†† and more probably the cases observed by Voltolini‡‡ were really adenoids, this does not detract in the slightest from the originality of Wilhelm Meyer's great clinical discovery.

* *Traite Pratique des Maladies du Larynx*, par. Dr. Ch. Fauvel, 1876.

† *Med. Record*, 1876, p. 359, Vol. XI.

‡ *Trans. Path. Soc.*, London, 1868, p. 65.

§ "*Die Anatomie des Menschen*," *Der Hals*, Bd. I, p. 210, 1862.

|| "*Der Schlundkopf des Menschen*," V. Hubert, V. Luschka, 1868.

** *Handbuch der Systemat. Anat. des Menschen Die Eingeweidelehre*, p. 83, 1866.

†† *Ueber die Bedeutung d r Bursa Pharyngea*, 1885.

‡‡ *Archiv. f. Ohrenheilk.*, 1867, p. 116, Vol. 2.

|| *Die Anwendung der Galvano-Kautik*, etc., 1867, p. 66.

Wagner in 1865* had described the anatomical structure of what he called "Pharyngeal Granulations."

Wilhelm
Meyer.

Wilhelm Meyer had reported his observations on this lymphoid hypertrophy, in Copenhagen, in 1868, and later published in London† his paper "On Adenoid Vegetation in the Naso-Pharyngeal Cavity." It is difficult to find, in the annals of medicine, a first report of a morbid process which so thoroughly in one essay exhausts the subject from almost every point of view. So common that, after his attention had been drawn to the condition, he was able to detect it in 102 cases in eighteen months, with symptoms so characteristic that the veriest tyro in medicine now easily suspects their presence at a glance, with certainty of relief so quickly afforded by a simple surgical procedure, it certainly seems marvelous that the condition should have been so long undetected. The practice of post rhinoscopy had failed to reveal it. Notwithstanding that Czermark and his followers for ten years had been accustomed to explore by vision the cavity of the upper pharynx, it was left to an observer comparatively unfamiliar with post rhinoscopy to detect it with his finger. In seeking for the cause of an eustachian catarrh in a patient he pushed his finger above the velum palati and thus became aware of a morbid growth, the removal of which has alleviated as much suffering and prevented as much disablement, as any surgical procedure which was ever devised by the wit of man. Not only by his thorough exposé of the whole subject did Wilhelm Meyer thus confer an inestimable boon on suffering humanity, but he has furnished a subsequent generation of rhinologists with their most lucrative source of income. No other event since the discovery of the laryngoscope has so contributed at once to the glory and the profit of the specialty of laryngology. With much more reason than Tagliacozzi's contemporaries and followers gazed upon his statue in Bologna, may the modern rhinologist and his patient alike, with unstinted reverence, view the figure of Wilhelm Meyer, as it stands, erected by them in 1898, in the "Gefion Platz" in Copenhagen. While only five cases had been previously noted, and while Waldeyer and his followers have subsequently further elucidated the histology of lymphoid hypertrophy, nothing of vital importance remains to be said of the history of "Adenoids" after Wilhelm Meyer.

It seems at first glance somewhat strange that the study of nasal disease should not have more attracted the attention of physicians even before the discovery of the laryngoscope. Nasal operations had

* Archiv der Heilkunde, p. 318, 1865.

† Medico-Chirurg. Transactions, 1870, Vol. 53.

been performed, as we have seen, since the beginning of medical annals. The Hindus, Hippocrates, the Arabians, Aranzi and his followers, were accustomed to perform anterior rhinoscopy, and one would naturally think some device would have been adopted for the efficient illumination of the internal nose. We have seen that Hippocrates used a canula for intranasal cauterization, and one wonders that this did not sooner develop into a nasal speculum.

Guy de Cauliac referred to a device of Haly Abbas which we have noted, a "speculum ad Solem," which may have been used for dilating the nostrils, but from certain passages in the Arabian authors as well as in his own works, I can not but suspect that this old master surgeon of the Middle Ages misinterpreted his perhaps faulty transcript of the original manuscript. Recent scholarship* has unearthed a significant passage in the works of Arnold of Villanova (1240-1313). If one will turn to the place indicated†, one will find the author describing very carefully and minutely the symptoms of leprosy and the physical appearances of the face, eyes, etc., in these cases. He then goes on to say: "Likewise they are to be known from the wound (ulcer) existing in the nostrils, and these should be examined more deeply; for which purpose one should take a *small bifurcated branch of wood like a forceps*, and this should be placed in the nose, opening it, and one should look in with a lighted candle and if ulceration or excoriation is seen well in the depths of the nose, that is a reliable sign of leprosy and one which will not be recognized except by the well instructed." It is plain, therefore, that one of our modern forms of nasal specula was formed from the fork of a tree branch by the doctors of the Dark Ages, and we incidentally receive another hint as to obscurity in the differentiation of disease.

From time to time in the works on surgery mention may be found and some illustration noted of nasal specula, chiefly devised for protecting the nose from the incandescent iron. Thus Garengot‡ pictures a speculum nasi through which hot cautery irons may be thrust to sear the os unguis in order to destroy it. "Ainsi voila son usage expliqué." Dionis in his work on surgery§ depicts an instrument which is still occasionally called by his name, and is, in metal, practically the counterpart of the device of Villanova in wood.

* Archiv. f. Laryngologie Bd. XI, Heft, 3, p. 482.

† Opera Arnaldi de Villanova, 1509, f. 204, Signa Leprosorum.

‡ Traite des Instruments, Tome II, p. 12.

§ Edit. 1716, p. 479, Fig. xxxvii, E.

Neglect of Nasal Disease.

We have reviewed the separate works of Deschamps, Cloquet and Piorry, on the nose, and have seen that knowledge of intra-nasal disease was fully abreast if not somewhat in advance of the knowledge of laryngeal disease up to the time of the fruitful labors of Czermak and Türck. The next fifteen years were almost exclusively devoted to the development of the knowledge of laryngeal morbid conditions as revealed in the laryngoscope, and to the technique of operative interference. In the first edition of Solis Cohen's book on Diseases of the Throat in 1872, containing more than 200 pages, scarcely 90 are devoted to diseases of the nose. In 1879 twenty pages were added in the second edition, but little or nothing of this extra space was devoted to the nose. A reference to any one of the recent text books, Lennox Brown's last edition for instance, will show that the proportion has been more than reversed in the thirty years of the active evolution of our knowledge of the normal and abnormal states of the upper air passages. In the first edition of Cohen's work, just referred to, the 90 pages are taken up with a consideration of Epistaxis, Coryza, Ozena, the nasal douche, Anosmia, foreign bodies, nasal polypi, for the removal of which the use of the nasal forceps was still advised. He does little more than refer to affections of the accessory sinuses. Spencer Watson and Michel, in 1875, published brochures on diseases of the nose, the latter being translated into English by Shurly in 1876, but it was after 1880 that the impulse to the more exhaustive study of intranasal phenomena began, and in another ten years the number of journal publications dealing with the nose and naso-pharynx had already exceeded in number those referring to the larynx and air tubes. Notwithstanding the enormous increase in all departments of the literature of our specialty, this discrepancy has continued to gradually become more marked*.

Revival of Interest in Nasal Disease.

Reflex Neuroses.

The first marked evidence of this awakening to the importance of nasal phenomena may be seen in the history of the interest aroused in reflex nasal neuroses. Certainly no other subject was so calculated to stimulate inquiry into all manner of nasal lesions. How grossly, after a few years, this subject was exaggerated and distorted is apparent, now that the exaggeration is decreasing. Notwithstanding the fact that John N. McKenzie† has pointed out that spasmodic affections of respiration had been noted by Coelius Aurelianus, Galen and many other subsequent writers in the prae-rhino-

* A reference to the summary of the literature in the first issue of each year of *Semon's Internationales Centralblatt für Laryngologie* will make this evident

† *Trans. Am. Lar. Ass'n*, 1886-7.

scopic era, Voltolini* was the first to note the phenomena at a time when the local conditions in the nose could be carefully studied by actual inspection. Voltolini drew attention to the intimate connection between asthma and nasal polypi, and asserted that he had seen the asthma disappear on the removal of the polypi. He referred the idea of reflex action from the irritation of the mucosa back to the physiology of Johann Müller, and we have seen the matter discussed in the lectures of Marshall Hall, in 1836. The beginning of the development of our knowledge of the erectile tissue in the nose, dates back to the brief paper of Kohlrausch,† who, in 1853, spoke of the cavernous tissue of the nasal mucosa, especially of the posterior border of the inferior turbinated bones, which we have seen Morgagni had described as of a glandular nature. Although Kohlrausch seems to have had the right conception of their essential nature, his methods of demonstration were very crude. Scarcely less superficial were the plates of Bigelow, in 1875,‡ who was misled somewhat, apparently by having blown air into the submucous tissues, and regarding these emphysematous spaces as blood channels. He, however, pointed out more intelligently the structure and erectile nature of this tissue. Both Kohlrausch and Bigelow refer to Hyrtl as having previously noted this cavernous condition of the mucosa, but I am unable to find anything more than a cursory reference by him to the vascularity of the mucosa in this situation.§ It remained for Zuckerkandl,|| whose work may be profitably consulted for a much fuller history of the subject, to more completely and satisfactorily elucidate the real structure. The evident dependence of the congestion of this erectile mucosa upon reflex action connected it, not only with the neuroses of hay fever and asthma, but with the histological changes in the stroma. A perusal of the subsequent literature will again reveal the process of differentiation in nasal affections, as we have so frequently had occasion to note in the course of this history. Schaeffer¶ had drawn attention to local disease of the upper air passages as an exciting cause for asthma and other neuroses, but it was not until the publication of W. Hack's** paper on "Reflex Neuroses," in 1882, that the attention of laryngologists was arrested. There followed a large number of contributions to medical literature by

Erectile Tissue
in the Nose.

* *Der Galvanokaustik*, 2d Aufl., 1872.

† Müller's *Archiv. f. Anatomie, Physiologie, etc.*, 1853, p. 149.

‡ *Boston Medical and Surgical Journal*, April 29, 1875, No. 17, p. 489.

§ *Vid: Hyrtl's Topographische Anatomie*, Ed., 1847, Bd. I, p. 212.

|| *Normale und Patholog. Anah. der Nasenhöhle*, Bd. I, 2te Aufl., 1893.

¶ *Deutsche Med. Woch.*, Nos. 32, 33, 1879.

** *Berl. Klin. Woch.*, Vol. XIX, 1882, p. 379.

Elsberg,* John N. McKenzie,† Roe, Daly, Bosworth, and many others. They elaborated this chapter in laryngology to an extent which now seems overdrawn, much more prominence being given to local conditions than to the underlying systemic neurosis in the etiology.

Intra-nasal
Surgery.

This immediately stimulated an interest in intranasal surgery, and no one can now deny that, for a while, the nose was a much abused organ. Chronic hypertrophy of the mucosa was perhaps the lesion which first attracted the chief attention. We have seen that the treatment of nasal obstruction, due to hypertrophy of the mucosa, by means of nasal bougies, had been recommended by Deschamp and Cloquet in the beginning of the century, and we find this method again proposed in America at the beginning of the development of modern rhinology.‡

Caustics and
Cautery.

The application of acids which we have seen in the records of ancient medicine, was one of the sheet anchors of intra-nasal therapy, but later was much neglected. Now it sprang suddenly into favor, some of the weaker acids, such as chronic or chloracetic, being found preferable to the painful action of the stronger mineral acids. Soon, however, these caustic applications give place in a large extent to the actual cautery, a still older therapeutic measure, as we have seen in the Hippocratic treatises, but now the hot metal, by means of the electric current, brilliant illumination, and cocaine, had become much more manageable in its application. The introduction of this method of cauterization goes back in prae-laryngoscopic times to the work of Middeldorpf, who in 1854 published§ illustrations of a cautery armamentarium practically the same with which we are now familiar. Voltolini in 1867 (l. c.) further developed the technique by the aid of laryngoscopy. He also was the originator at this time of electrolysis in various affections of the nose and throat. The improvement in the source of the electric discharge soon brought the method of galvanic cauterization into universal use. An ingenious operation frequently needs only the recommendation of novelty, and Michael's amusing little poem entitled "Rhinologie," read at the International Congress of 1890,|| shows that even by that

* Trans. Am. Lar. Ass'n, 1883, p. 79.

† Am. Jour. Med. Sc., July, 1883.

‡ In a report of the proceedings of the New York Laryngological Society, we find Asch, Wagner and Smith advising the use of intranasal bougies, in hypertrophy of the inferior turbinated bone. N. Y. Med. Jour., Vol. XIX, 1874, p. 422.

§ Die Galvano-Cautic, von Albrecht Theodor Middeldorpf, 1854.

|| Vid. Centralblatt f. Lar. VII, p. 133.

time intranasal cauterization was becoming a little ridiculous. For almost every affection of every organ, from the uterus to the eyes, after the spread of Hack's ideas,

"Dann wird die Nase ausgebrannt,
Denn das hilft immer wie bekannt."

Other methods of removing intranasal obstruction came rapidly into use. The dental engine seems to have first been used by Solis Cohen.* He destroyed an exostosis of the nasal passage by this means in 1878. Seiler seems to have been the first to suggest the use of the electro-motor for driving the dental engine in this operation†. After the introduction of this adjuvant, the apparatus became a part of the armamentarium of every laryngologist, at least in America, though much later in Europe. In 1887 Bosworth reported his invention of a nasal saw for septal ecchondroses‡ and this method of their removal was so practical that its performance immediately became very common.

The Dental
Engine

The Nasal
Saw.

We have already followed the history of the nasal snare down to the 19th century, and we have to note one more reproduction and modification of Hippocrates' loop, before we reach the Jarvis' Snare. It is that of William Robertson§. He used harpsichord wire which however did not run through a canula but through lateral guides at the side of a steel post.

The Nasal
Snare.

Jarvis' chief improvement|| over the snare of Fallopius consisted in the method of drawing the wire through the canula. He made use of an outer canula at the distal end for the attachment of the wire and the adjustment of the milled nut to a screw thread on the inner canula, by the use of which the loop could be powerfully, accurately, and slowly tightened. This immediately made the nasal snare the most efficient instrument for the removal of soft intranasal tissue, and the numerous subsequent modifications testify to the fact.

All this activity and zeal for the removal of intranasal tissue would have been very much less had it not been for the epoch making discovery, by Carl Koller in 1884¶, of the surgical possibilities of cocaine. The three greatest events in the history of Modern Laryngology and Rhinology are the demonstration of the utility of the laryngoscope by Czermak and Türck, the observation of adenoids by Wilhelm Meyer, and the advent of cocaine. Its use in laryngology was introduced by Jelinek**. The impunity, so far as

Cocaine.

* The Medical and Surgical Reporter, July 13, 1878, Vol. 39, p. 30.

† Diseases of the Throat, Edit. 1883, p. 248.

‡ Medical Record, January 29, 1887.

§ Edinburgh Medical Journal, Vol. I, 1805, p. 410. Fig. p. 404.

|| Trans. Am. Lar. Ass'n., 1880, p. 130.

¶ Wiener Med. Woch. 1884, No. 43, p. 1276, seq., N. Y. Med. Journal, January 3, 1885, p. 19.

** Wiener Med. Woch. No. 45, 1884, p. 1332.

pain is concerned, with which the mucous membranes of the nose and throat may be burned and lacerated, has done perhaps more than anything else towards the development of the technique of laryngology. A merciful Creator having invented pain for the protection of the tissues of the animal world, its abolition by the ingenuity of man has been necessarily followed by much ruthless and unjustifiable destruction of them, but nevertheless among drugs cocaine ranks only second to the general anaesthetics in the mercies vouchsafed to the human race.

Inhalations.
and Deter-
gents.

When we seek the origin of the local topical treatment of catarrh of the upper air passages by detergents we are immediately transported far back into the misty records of Hindu medicine, and the same may be said of inhalations. We need not trace these through the intervening ages, but, after the incidental references which have found their way into the foregoing pages, I am sure the reader will not regard the taunt of the Frenchman altogether without its sting. "Tout ce que les mēdecins modernes ont fait pour guerir le rhume de cerveau, ç'a été, de l'appeler Coryza." Had he been familiar with medical history, he would not have been ready to concede us even that meagre praise.

The compressed air spray seems however to have really been an invention of a comparatively recent date, but we are compelled to seek distant fields for the history of the actual inception of that idea. Galen is said to have prophesied we would some day succeed in isolating the Pneuma in the atmosphere which is taken into the blood in respiration. We have noted the observations by Lower and Mayow in the 17th century. Priestly, in actually isolating oxygen from other substances, scarcely knew more of it, still terming it Deplogisticated Air, than did his predecessors in the 17th century;* but the time was ripe for its elucidation, which quickly followed under the admirable and accurate experimentation of Lavoisier. He was the first to give it the name of Oxygen† in 1777. This very soon aroused great interest in the gas as a medicinal agent, and devices were adopted for its inhalation by Beddoes and Watt in 1796.‡ Some years before this John Mudge§, knowing nothing of the pulmonary residual air, nor of the ciliated epithelium advised the inhalation of steam, combined with opium, with the idea that the medicament would thus reach the ultimate bronchioles. His apparatus was very much like

* Priestly: "Experiments and Observations on different kinds of air."—London, 1775.

† Comtes Rendus de l'Academie des Sciences, September 5, 1777.

‡ Considerations on the Medicinal Use and on the Production of Factious Air, 1796.

§ A Radical and Expeditious Cure for a Recent Catarrhus Cough, 1782.

the present croup kettle with a flexible tube. When Davy announced the existence of residual air in the lungs the significance of it was immediately appreciated by Majendie, who comprehended the impossibility of thus applying medication to the ultimate ramifications of the pulmonary tree.

The idea of the use of sprays in the air passages seems to have originated at one of the French baths. Some apparatus for spraying the body had been in existence for some years when it occurred to Dr. Auphan, in 1849, to utilize it for inhalation. Sales-Girons succeeded in inventing a portable apparatus for the purpose. It was a very awkward affair, somewhat on the principle of some of the present inhalation globes. A fine stream was broken into particles by being thrown with force against a concave surface. Mathieu, Bergson, and others improved this somewhat, and finally the latter conceived the idea of breaking the stream of water into a spray by a blast of air or steam blown across its exit from a narrow tube. This of course necessitated the employment of compressed air. This ingenious invention, under various names and modifications, was received with great enthusiasm by the budding specialty of laryngology. The mucous surfaces were deluged with all sorts of drugs suspended in watery and oily media. The futility of much of this sort of therapy has gradually become apparent, but since the introduction of antiseptics it has found its place in laryngological practice, not its least virtue consisting in impressing the patient with the resources and skill of his doctor. At first attempts were made to use warm sprays, but as early as 1861, Demarquay* drew attention to the fact that watery sprays have approximately the same temperature after they are nebulized, whatever may have been the previous temperature of the fluid. I find the use of nebulized sprays first recommended in America by Solis Cohen in 1866†.

The Compressed Air Spray.

Besides the great strides made in operative technique, fewer advances have been made in the art of Rhinoscopy and Laryngoscopy itself. Intensification of illumination was obtained in the early history of laryngoscopy by the use of the oxy-hydrogen lime light, the idea beginning, as we have seen, with Voltolini, while in Fauvel's book‡ the more perfect apparatus of Drummond was recommended for the purpose. French has used Aranzi's idea, a ray of light

Improvements in Illumination.

* Bulletin de l'Académie Impériale de Médecine T. xxvii, 1861-2, p. 26.

A fuller account of the history of sprays may be found in Lewin's book "Inhalations Therapie," to which I am indebted for some of the above information.

† New York Medical Record, p. 147, 1866-7.

‡ Traité Pratique des Maladies du Larynx, 1876.

reinforced by a water lens, and found the best illumination in the rays of the sun thus intensified. His application of the arc light to the purpose is also very efficient, he having adopted both these expedients in his photographs of the larynx and naso-pharynx.* Turck† and others had attempted to magnify the laryngoscopic image by means of lenses and concave mirrors, and Hirschberg,‡ later, attempted the same thing. These attempts have proved of no practical value. By means of stroboscopy, Oertel,§ in 1878, showed the wave lines of different tones in the vibrations of the vocal cords.

Transillumination.

Transillumination of the tissues, which had been suggested by Voltolini, was applied to the examination of the accessory sinuses, in 1887 and the following years, by him and many others, when diseases of those cavities began to attract more careful study. The electric lamp has made this original idea of Voltolini a valuable aid in rhinoscopic diagnosis. Lastly, we have to note the method of Kirstein, of direct inspection of the larynx, which promises to be, however, of very limited application,|| and one which had already been, to some extent, anticipated again by Voltolini, in 1872.¶ Indeed, to Voltolini is to be attributed a much larger proportion of original ideas in the development of the specialty of laryngology than to any other one man. In this fertility of resource he scarcely has had a rival in the history of our subject.

* Vid. Trans. Am. Lar. Ass'n, 1882, 1883, 1886, 1888, 1896.

† Zeitsch. der K. K. Gesell. der Aertzte zu Wien, No. 52, 1859, p. 817.

‡ Virchow's Archiv., 1877, No. 69, p. 146.

§ Centralblatt f. die Medicin. Wissenschaft, 1878, p. 99.

|| Berl. Klin. Woch., 1895, No. 22.

¶ Die Galvanokaustik.

Deformities of the Nasal Septum and their Treatment by Means of the Electric Trephine.—LANDAU (Jour. Med. de Bruxelles, No. 41, Oct. 10, 1901).—*Revue Heb. de Laryngol., D'Otol., et de Rhinol.*, Dec. 21, 1901.

The author advises the reduction of the septal spur or ridge by making a succession of perforations with the electric trephine and then smoothing the uneven surface left by means of these openings. (A method advocated many years ago by Dr. Holbrook Curtis.)

W. SCHEPPEGRELL.

PNEUMATIC MASSAGE IN AURAL PRACTICE.*

BY EDWIN PYNCHON, M.D., CHICAGO.

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At a meeting of the Sixth International Otological Congress, held in London, August 11, 1899, the Lenval prize was awarded to Dr. Charles Delstanche, of Brussels, on account of his devices for otoneumatic massage which were regarded by the jury as being so material an assistance in the practical treatment of affections of the middle ear as to merit this award.¹

No stronger indorsement than the above could be desired as to the recognized merit of pneumatic massage in aural practice.

In the treatment of this subject it becomes necessary to briefly consider all forms of massage employed in the treatment of diseases of the ear, of which pneumo-massage may be said to be the middle register, with the pressure probe as bass, and phone-massage as high register. They each have their proper field. Lucae² has for years advocated the use of the pressure probe. Lester³ has modified this method by having the pressure probe attached to, and operated by, a tiny electric motor, so as to give a rapid, short stroke, 1-16 inch from center, for from three to ten seconds. In pronounced cases wherein the ossicles are firmly bound down by adhesive bands, Bishop⁴ has employed an ossicle fork, one prong of which is introduced back of the handle of the mallet through a previously made slit in the drum head, while the other prong is outside thereof, and thus strong enough traction is made to break up the adhesions.

As air is the natural medium for conducting sounds through the auditory canal to the middle ear, it would seem most rational to make use of pneumatic massage which, in its simplest form, is done by producing suction with the moistened finger tip applied to the external opening of the auditory canal.

Hand massage, as with a Siegle pneumatic speculum, or a Delstanche masseur, has been extensively employed by different otologists, and particularly by those who have found that the results from hand massage were equally as good, or even better, than when such mechanical devices as were available had been used. In this

*Read at the Seventh Annual Meeting of the Western Ophthalmologic and Oto-Laryngologic Association, Chicago, April 10-12, 1902.

progressive age, wherein machinery is supplanting hand labor in so many fields, it seems apparent that a properly constructed device, which perfectly gives the several modifications of the massage air current, should easily supplant manual treatment which, of necessity, cannot be administered without variation or fatigue during a seance of several minutes' duration. Furthermore, the doctor's time is too valuable for him to be doing in a mediocre manner that which a properly constructed machine can do much better than he possibly can. The therapeutic effects to be obtained all hinge upon the mechanical details whereby all possible variations of the air current can be produced.

The electric current for medical use is gauged and regulated by means of the milleampmeter, the pole-changer, rheostats, rheotomes and transformers in order to secure all of the available physical properties and variations thereof. In like manner in order to secure the maximum results to be derived from pneumatic massage it is necessary for the mechanic to first furnish means for securing all of the desirable physical properties of the air column or current employed, which may be summarized as follows:

A. The character of the air current.

1. Simple vibration.
2. Aspiration with release.
3. Continuous aspiration.
4. Compression with vibration.
 using a. Plain air
 - or b. Medicated nebulae.

B. The length of stroke of the pump piston.

C. The rapidity of the strokes.

D. The force or gentleness of the stroke—which latter is secured by the use of an air rheostat.

E. The amount and character of the accompanying noise (phone-massage).

F. The length of the seance of treatment.

G. The frequency of repetition of treatments.

H. The duration of the course of treatment.

In Considering the Character of the Air Currents employed the first one noted as that of simple vibration is the one which has been most often employed. The next one mentioned as that of aspiration with release is one whereby successive rarefactions are intermittently produced, but without alternate compressions as with the preceding current. In other words, after each suction from

the upward stroke of the pump piston, a valve is released so that the downward stroke operates freely upon the outside air. In this way after the drum head is drawn forward by suction it returns by its own elasticity. This current should not be used at a greater rate of speed than 150 V per minute, as when above this rate it "loses its distinct, exhausting and releasing character, as the two begin to run together, owing to the elasticity of the air,"⁵ and it thus becomes a continuous aspiration. For its primary and principal use the slower vibrations, 30 to 90 V, can with the greatest advantage be employed. When this current is being used the patient should be directed to swallow every few seconds. By having this current available there is never any necessity of "starting on the exhaust stroke," the importance of which has been so frequently mentioned by different writers, for when using the simple vibratory current the stroke should be so short that the position of the piston is immaterial. The third current is that of continuous aspiration employed in suppurative otitis after the perforation has taken place, and care should be given that the stroke is neither too long nor too rapid.

The fourth current, designated as that of compression with vibration, is the ordinary air pump, the air current from which can, if desired, be medicated by being made to pass through a hand nebulizer and can then be employed either for inflation through an Eustachian catheter, thereby giving intra-tympanic massage, or to force a nebula inwardly through the external auditory canal in chronic suppurative cases, wherein the drum head is freely perforated, as has been advised by Stillson.⁶ For this use a long, rapid stroke is required.

The Length of the Stroke of the pump piston varies with the air current being used, and should be shortest with the simple vibratory current. It should at no time be of sufficient length to cause discomfort to the patient, and should generally bear an inverse ratio to the speed being used, viz.: the stroke should be shortened as the rapidity thereof is increased. With the aspiration with release current a long stroke will be tolerated, and with the compression current both a long and rapid stroke will be required in order to produce a nebula.

The Rapidity of the Strokes. As is elsewhere elaborated it is only the slow stroke that produces true massage, and its effect is chiefly operative upon the conductive mechanism. As the speed is increased, the stroke meantime being shortened, its effect ex-

tends more to the labyrinth, though when ossicular rigidity is marked, in combination with an atrophied drum head, the rapid jar of the short stroke tends to produce ossicular movement far more than would a long, slow stroke and is furthermore not damaging to the drum head.

The Force or Gentleness of the Stroke. Plumbers make use of an air cushion in order to avoid the noisy jar which would otherwise occur when the outlet valve at the washstand is suddenly closed. In the same way the force of a vibrating air current can be modified by the introduction of a similar device. I have for several years made use of a hard rubber piston syringe,⁷ which is attached to the ear piece and through which the jar of the air current can be lessened at will by withdrawing the piston so as

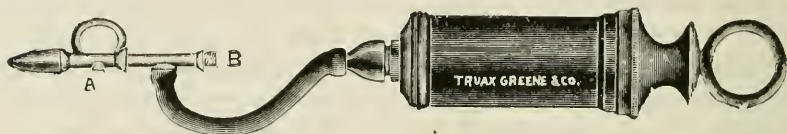


Fig. 1. Oto-Pneumatic Masseur ($\frac{1}{2}$ size).

to increase the amount of imprisoned or residual air. Another material advantage derived from its use is that of slow and forcible exhaust in order to overcome the drum-head retraction in combination with the rapid vibrations.

Stillson⁸ has described a similar device whereby the drum-head is "held forward by the elastic expansion of a soft rubber ball previously compressed." I have found, owing to the unavoidable leak in an apparatus of this kind, that a continuous rarefaction cannot be maintained, and hence the operation of the piston syringe gives far better results. On the exhaust stroke the hole (A, Fig. 1) is closed by the operator's finger, while on the down stroke this hole is left open. This device is used most often with the simple vibration air current and is attached to the pump hose at B. While in the illustration a fitting for only one ear is shown it will give an economy in time if a double ear-piece, like a bin-aural stethoscope, be employed when both ears are to be treated. In such case the exhaust syringe had better be attached at the point of bifurcation.

In order to produce an even pressure when using an electric masseur, Lucac punctures the rubber tube close to the ear by making a small hole with a red-hot needle.² Inserting the ear-piece loosely in the ear is another method whereby the force of the pump

stroke has been softened. Neither of these methods would seem to be as exact as is the use of an air rheostat.

The Length of the Seance of Treatment varies with the sensitiveness of the patient, and may range from ten or fifteen seconds up to several minutes. Lautenbach⁹ reports the use of massage in one case twice daily, three hours at each treatment, and continued for five days when she "heard a clock at over two inches." In acute cases the seance should be brief, while in old "chronic-non" cases a treatment extending from fifteen to thirty minutes is to be advised.

The Frequency of Repetition of Treatments. In acute cases, and at the beginning of a course of treatment in old or chronic cases, a daily seance is to be advised, which, after a while, may be changed to every second, and later to every third day, though if the matter of expense is of no importance with the patient, daily treatments had better be continued in order to insure the greatest progress.

The Duration of the Course of Treatment is only to be considered with chronic cases as acute cases will naturally discontinue when they recover. In case of the former the results should be noted every two or three weeks and treatment persevered with as long as progress is being made, which is often so gradual as to require several months' time. A return to treatment should always be earnestly advised when any degree of retrogression is detected after a period of discontinuance.

As writers upon the subject of mechanical oto-pneumatic massage have generally been remiss in not giving the several minor details which are so essential for its proper use, I have taken the liberty of enumerating the more important features. Furthermore, in order to show the different practices of different practitioners, I will tabulate the deductions of a few who have been sufficiently clear to quote as regards these matters of detail.

While I have for several years been employing pneumatic massage through the use of both mechanical and hand exhaust devices, I have been constantly appreciating their shortcomings and have thereby been led to believe that the results derived from such treatment might be more uniformly beneficial were the several patent deficiencies in the devices used suitably overcome. I have recently succeeded in inducing the Victor Electric Co. of this city to so modify their excellent pneumatic massage pump that it will comply with the requirements previously outlined. Furthermore, the

means adopted for instantly separating the pump from the motor, by the simple swinging of a lever, which operates an eccentric axle.

AUTHOR.	Length of Stroke.	Strokes per Minute.	Length of Seance.	Repetition.	Duration of Course.
Stevenson, (10)	$\frac{1}{4}$ to $1\frac{1}{4}$ inch	30 to 60	Up to 30 min.	?	?
Lautenbach, (11)	$\frac{1}{2}$ in. and 1 in (?)	40 to 300	20 min. to 3 hrs.	Daily or less often.	3 Mos.
Jackson, (5)	$\frac{1}{2}$ in.	100 to 200	15 to 30 secs.	3 Times weekly.	?
Seiss, (12)	Up to 1 in.	60 to 720	?	Daily or less often.	2 to 4 Weeks.
Ostmann, (13)	2 to 4 m m	600 to 1200	10' to 25 min.	Daily.	3 Mos.

greatly improves the outfit as a cautery transformer, and when the use of the pump is again desired by swinging the lever back the pump starts at the same length of stroke as existed before the disconnection.

The Length of Piston Stroke can be varied from 0 to $1\frac{1}{4}$ inch, and the exact length of stroke desired can be selected by a gauge attached to the crank-pin. The rapidity of the piston stroke in my apparatus varies from 40 to 600 V per minute, though owing to variations in the voltage of the electric current by which the motor is operated, and furthermore to variations in the diameter and quality of the wire used as resistance in the transformer, a slight variation in speed will always be observed when comparing the several motors made at one time, all of which were intended to be alike.

It is principally in the treatment of the so-called "chronic-non" cases—the non-suppurative catarrhal otitis with ground-glass drum-head, which is so often the forerunner of sclerosis, wherein pneumatic massage is indicated, to improve the hearing and additionally to control or diminish the accompanying tinnitus which is probably most often due to labyrinthal pressure and has been tritely compared by Spear¹¹ with the "seeing of stars when the eye is pressed,"

as tinnitus is produced whenever the tension within the labyrinth becomes greater than normal from pressure within, or from changes in the external ear, or the middle ear, with pressure from without. Vertigo, another symptom occasionally complained of, is also at times a result of pressure. Through its favorable effect

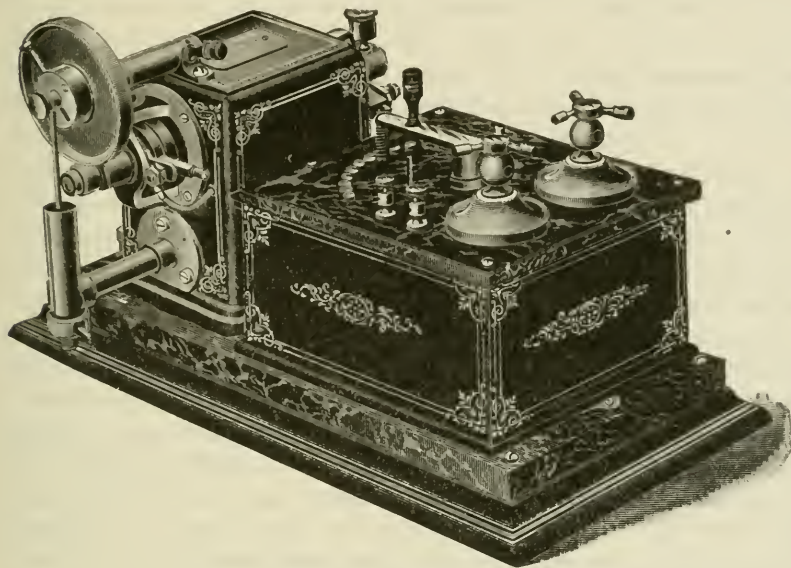


Fig. 2. Victor Transformer with New Massage Pump.

upon the cause—middle ear adhesions, etc.—pneumatic massage is often beneficial in both of these conditions. It also assists greatly in the correction of itching of the external auditory canal, and furthermore is generally instrumental in increasing the secretion of wax when the canal has become too dry, both conditions being concomitant with chronic catarrhal otitis media. Additionally, in hypertrophic cases, inflation by the Politzer method soon becomes more easy of execution.

In the treatment of middle ear cases the aim should be to cause the defective ear to assume, as far as possible, the physical character of the normal ear, and most important of all to increase the ossicular mobility. Passive flexure of ankylosed joints in other localities being the most valuable method of treatment, it would seem reasonable that a similar treatment, suitably modified to conform to the local conditions, would give the greatest promise of benefit. In addition to causing motion of the ossicles by breaking up adhesions, and absorbing hyperplastic deposits, massage stim-

ulates and improves the circulation in all of the middle ear structures, thereby increasing the nutrition thereof. For this latter effect the short, rapid, simple vibratory stroke is most efficient.

As forcibly stated by Jackson⁵ pneumo-massage "frequently arrests the onward march of a progressive difficulty of hearing even if an absolute cure is not established * * * and offers good chances of benefit in all cases due to defect of the sound conducting apparatus, whether the result of purulent or catarrhal otitis media, and whether acute or chronic, hypertrophic or hyperplastic." In a general way those who hear better in a noise (*paracusis Willisii*) are benefited by pneumatic massage. The concensus of opinion of writers upon this subject is that deafness occasioned by suppurative disease of the middle ear is peculiarly favorable in its reaction to massage. Seiss¹² states that senile deafness can be retarded almost indefinitely.

In cases of this class the conducting mechanism is primarily at fault, hence the trouble is essentially in the middle ear, though the labyrinth is quite prone to becoming secondarily affected to some degree. In these cases the chief objective symptom under ocular inspection is impaired mobility of the ossicles, associated with more or less dullness and thickening of the drum-head, which is also oft-times retracted. It is in cases wherein the drum-head is most dense that pneumatic massage with long, slow vibrations is of most value. On the other hand when the m. t. is thin or atrophied, suction may add to the trouble without moving the ossicles, hence in this condition a very short and rapid stroke should be employed.

As regards the value of pneumatic massage in acute inflammatory troubles of the middle ear authorities differ. On the one hand Seiss thinks it contraindicated in cases accompanied by any active inflammatory process. In similar conditions Burnett¹⁵ advocates maintained rarefaction with a Siegle pneumatic speculum so as to thus maintain traction upon the m. t. and its tensor. Lautenbach⁹ uses vibratory suction in acute cases as soon as possible in order to avoid adhesions.

Pneumatic massage has proved of value in suppurative conditions of the middle ear, particularly in cases of long standing, and when employed in addition to the usual line of treatment, will often greatly expedite a cure, owing to its mechanical effect in jarring or drawing down discharges from the attic. In the treatment of this condition either the continuous aspiration current or the aspiration with release current should be employed with a piston

stroke of such length and force as to not cause annoyance to the patient, and continued for about five minutes. Following this, and later on when cleansing is less required, the strokes may be shortened and the rapidity increased so as to give greater stimulation, say $\frac{1}{8}$ inch simple vibration at 300 V for thirty seconds or longer. In recent cases of suppurative otitis media, *after perforation of the drum-head had been produced*, a very short, slow vibratory stroke may prove beneficial in the way of shortening the period of discharge and by preventing the adhesive formations which are so prone to occur.

For the welfare of the patient all other well-known methods of treatment should be simultaneously employed, as care for hygienic surroundings, general medication when indicated, tympanic inflations, and particularly an aggressive attack upon any and all mal-conditions of the nose and upper throat which may be present, in order to correct the chronically inflamed or catarrhal condition of the mucous membrane of the nasal passages and fauces, which, through continuity of tissue, is such an important etiological factor in a very large majority of all ear diseases. It is after the correction of these nasal and faucial abnormalities when pneumatic massage *added to the other treatment* may give the most favorable results.

As the cause of all sounds heard by the ear is due to motion noises, as of musical instruments, etc., have been employed to secure motion or vibration of the drum-head and ossicles, such process being known as phone-massage. Reports upon the use of phone-massage alone have been quite varied, and upon the whole unfavorable. This is quite likely in part due to the character or unnatural combination of sounds so often employed. Those who have had most experience therewith do not use phone-massage alone, but generally in combination with pneumo-massage.

It would seem rational to expect most of phone-massage in the treatment of labyrinthal deafness, though as such cases are almost invariably complicated by or secondary to middle ear trouble, it is easily surmised why phone-massage alone should often prove disappointing. There is a necessity, in case of labyrinthal deafness, to consider its character or cause:

- 1st. When independent of middle ear trouble, the cause being central or local, from brain or nerve lesion due to systemic, toxic or other causes, as intra-labyrinthal hemorrhage or traumatism, which class of cases is rarely met with and

probably constitutes less than 5 per cent. of all cases in which the labyrinth is perceptibly involved.

2nd. When secondary to or associated with middle ear trouble:

A. Cases in which inflammation has not been a causative factor:

1st. Result of exhaustion.

2nd. Result of non-use (as with the deaf-dumb).

B. Cases in which middle ear inflammation has been a factor, causing:

1st. Inflammation by extension,

2nd. Compression.

It thus becomes apparent that no heterogeneous combination of sounds will give promise of benefiting the labyrinthal end of the deafness present. Cases coming under the first heading are not benefited by any form of massage treatment, and with those coming under the second heading a suitable form of phone-massage should be selected for each subdivision, though always in combination or alternation with pneumo-massage. From a theoretical standpoint it would seem that for boiler-makers' deafness, a repetition of musical airs would give most promise of benefit, and that to educate the dormant nerves of the deaf-dumb either the human voice through a speaking tube, or the phonograph would be the most practical. It is essential in all cases that the interest of the patient should be kept active by either the selection of recognized tunes or by the employment of speech. Phone-massage, if too long continued, or if the notes are too shrill or too powerful, will prove exhausting to the auditory nerve and may possibly cause labyrinthine hemorrhage. I have had no personal experience with mechanical devices for the production of uncombined phone-massage.

Of course with any mechanical device for the production of pneumo-massage there is unavoidably present a certain amount of noise, which becomes more pronounced as the speed of the motor increases, the effect of which is undoubtedly, at times, unfavorable, any may explain the lack of improvement sometimes observed when mechanical pneumo-massage has been employed. The practical absence of noise in the giving of massage treatment with the Siegle device is, to my mind, the principal advantage in its use. Should, in future, a method for eradicating noise from mechanical pneumo-massage be devised, it will be an undoubted advantage, though the regular and unvarying character of the noise as at present exists is the least disadvantageous, and in the most perfectly con-

structed pumps is reduced to a minimum. Such noise may, in fact, at times be an advantage. In this connection attention must be called to the pneumatic otoscope of Bishop¹ with which either gentle or powerful hand massage can be given, even better than with the device of Siegle, and additionally if desired in combination with a magnified view of the parts being treated.

In order to watch the effect upon the m. t. a pneumatic speculum can be used as the ear-piece, and such practice is particularly advisable during the first few treatments, or until the tolerance of the patient is learned. It is only the slow vibrations that can be seen and counted. Above 150 V they run into each other and lose their individuality. A faint reddening of the drum-head is an indication to discontinue. A treatment "should never cause pain, vertigo, echymosis, or increase tinnitus; if so it has been too vigorous."¹² Old cases, with tough and thickened drum-heads, will stand the greatest dosage, though tolerance in most cases will increase as the course of treatment progresses.

As regards the application of pneumatic massage in aural practice it may be said, in a general way, when addressed more particularly to the middle ear, that slow vibrations with but little noise are of the greatest value. When greater speed is employed its effect reaches more to the labyrinth, and this is furthermore favored by the increase of noise due to the more rapid motion of the engine. In order to secure the greatest range of therapeutic action it is essential to be able to command a stroke ranging from the merest tremor, say 1-16 inch, up to 1 inch or more, and as regards speed from 30 to 40 V per minute up to 600 V or more.

The conclusions to be drawn are that slow vibrations (30 to 90 V) are generally best adapted to middle ear troubles; that more rapid vibrations (300 V and over) have a more pronounced effect upon the labyrinthal nerves, and that improvement of middle ear conditions will have a favorable effect on the labyrinth in those cases in which trouble of both the middle and inner ear co-exist.

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Columbus Memorial Building.

ICHTHARGAN. ITS USE IN NOSE AND THROAT DISEASES.*

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Ichthargan was sent me by the Ichthyol Company of Hamburg, for the purpose of testing its value in nose and throat diseases. For the past year this compound of our two valued drugs, silver and ichthyol, has been used in the clinics where I work and its effects have been carefully watched by assistants. The observations compiled by me are the result of the work of my two assistants, Dr. J. W. McCready and Dr. Colin Begg, to whom I give full credit for their work with this remedy. The principal contributions to literature concerning this drug are by Dr. Aufrecht, consisting of reports of experiments on the lower animals; clinical work has also been done by Drs. Leistekow and H. Loenstein. So far as I am informed there is no rhinological literature on the subject.

Ichthargan is a compound of silver and ichthyol. Its chemical name is silver-thio-hydrocarbo-sulphonate and it is a brown, amorphous powder, odorless and stable. It is easily soluble in water, glycerin, and diluted alcohol; but is insoluble in absolute alcohol; ether and chloroform. The aqueous solution becomes gradually darker when exposed to light; but if kept in amber-colored bottles it undergoes no change. A concentrated solution is precipitated by a solution of sodium chloride, and also by a solution of albumen; but the latter precipitate is redissolved by an excess (of albumen). Ichthargan contains 30 per cent of silver and 15 per cent of sulphur, both in organic combination with the bases from the ichthyol sulphonic acid. It is thus seen that in its silver contents ichthargan is the strongest of all the silver compounds; argonin containing 4.2 per cent of silver; argentamin, 6.3 per cent; protargol, 8.3 per cent, and largin, 11.1 per cent.

It was to be expected a priori that this compound would prove a strong bactericide, but it still had to be ascertained whether it possessed the strong antiphlogistic, secretion-diminishing, and penetrating properties that are so eminently peculiar to ichthyol. A series of experiments were undertaken by Prof. Aufrecht (Deut. med. Woch. No. 13, 1900), with a view of throwing some light on

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the above points. To ascertain the penetrating properties of ichthargan pieces of rabbit liver were immersed in a 0.5 per cent ichthargan and the same of silver nitrate respectively. After sixteen hours they were removed and treated with ammonium sulphide. The pieces from the ichthargan solution contained a brownish black precipitate throughout their entire mass, while those from the silver nitrate had a black coloration of silver sulphide on their surface only. This shows the greater penetrating power of ichthargan over silver nitrate. Further experiments show that it had in 0.3-0.5 per cent solutions, it had the power to prevent decomposition in meat, bouillon, urine and other organic liquids. In numerous experiments with anthrax bacilli, gonococci, streptococci, staphylococci, typhoid and diphtheria bacilli, it was shown to have a much higher bactericidal power than silver nitrate. It was demonstrated as less toxic than the silver in experiments on frogs, guinea pigs, rabbits and dogs."

The toxic dose according to Dr. Aufrecht, is between .10-.15 centigrams for every kilo. of weight, while that of silver is .015, actol .035, irtol .02, protargol .04. This shows that the other silver salts are much more toxic. The investigator himself took .3 of ichthargan on three successive days and on the fourth day, .5 without unpleasant effects. He concludes that the drug when administered by mouth or subcutaneously, is not followed by dangerous results. In intravenous injection the ichthargan is more toxic, but is less so than the silver preparations.

Ichthargan for nose and throat work must be used in preparations from 1-50 to 1-10. The strength of 1-20 has been found best for general use. Water or glycerine or a mixture of both make a convenient vehicle for the drug in practice. In the clinic work both glycerine and watery solutions were used so that the exact effect of the drug in both solutions could be determined, one being substituted for the other as soon as a particular effect was noticed in order to determine whether any of the effect observed was due to the glycerine menstruum. This is necessary in many cases as glycerine is an active remedial agent. It may be mentioned here that it was found best to keep the bottles containing the drug in a dark place, to prevent precipitation along the sides of the bottles of what looked to be metallic silver. When the drug is applied as a powder it causes smarting, burning and sneezing and should never be used in this form. It is not strong enough to be a cauterant and yet is strong enough to produce considerable irritation.

Effects. Watery solutions of .1 to .3 per cent seem to have no other effect than to increase the flow of mucus from the nose. There was very little irritation and only a moderate amount of smarting for about a minute. The same percentage dissolved in glycerine showed only the effects of the glycerine. A 1 per cent solution was more irritating, but no vascular changes were observed in the nasal mucous membrane and the secretion was but little more than that produced by the lower per cents. An interesting point in this connection is that some patients complained of the use of these solutions, while others did not complain at all. In 10 per cent solutions the patients complained of disagreeable taste and nasal irritation lasting over 15 minutes, sometimes as long as two hours. This strength solution caused some congestion of the membrane a few minutes after its application, with profuse nasal discharge and lachrymation with some sneezing. After considerable experimenting it was found that the most generally satisfactory solution was 4 per cent. This produced generally a slight burning and smarting, never enough to amount to pain, even in acute coryza cases, where the nose was hypersensitive. There was no over-reaction from the 4 per cent solution. After application of the solution to a congested area there was noticed an anemia with some contraction and shrinkage of the mucous membrane. There seemed to be some slight anesthesia produced at the same time. We never noticed any interference with the nutrition of the tissues. The anemia produced was not particularly marked in all cases, while in others it was almost as pronounced as that produced by suprarenal. In still other cases there was no vascular change observed. Almost all drugs used in the nose produced either hyperemia or anemia of the membrane and this effect can not be claimed as one of the special effects of ichthargan. Occasionally simple irritation of the nasal mucous membrane will cause anemia of the part and probably the slight astringent action of this drug, together with the mechanical effect of its application causes the anemia noticed. The anesthesia noticed cannot be put to any practical use since it was so slight and was possibly only the loss of sensitiveness often found in anemic tissue. Its action, however, was very prompt, the effect being produced in 20 seconds and lasting from 15 to 20 minutes. This is especially true of the contracting power of the drug and its control over hyperemic nasal vessels. Not having used it in the normal nose, I can only speak of its use in pathological conditions.

It seems to be useful for the effect which has (1) an anesthetic, (2) antiseptic, (3) antiphlogistic, (4) stimulant, (5) alterant and (6) as a modifier of nasal secretion. The anesthetic effect is not marked, and is secondary to its effect on the blood vessels. Its antiseptic effects are not only seen in culture tubes, but in experiments in the nose in cases of atrophic rhinitis, the odor is materially lessened in a short time. As an antiphlogistic it has an important action on the respiratory mucous membrane. Its first effect is to produce anemia. This is followed, under strong solutions, by no reaction, the parts simply returning to their normal condition. When stronger solutions are used the irritant effect is more marked, producing congestion in from half an hour to an hour after application. This excessive congestion disappears in 15 minutes and the circulation in the nose seems to be improved afterwards. When ichthargan has been used for some time a tolerance is established. This is followed by improved blood vascular tone and clearing up of the congestion.

These effects have been observed not only in acute congestive conditions, but also in chronic congestion accompanying the active hyperemic stages of inflammation.

As a stimulant the drug acts in two ways. First as an alterant to produce more healthy circulation, diminishing congestion, lessening exudation and it also acts probably directly on the cell protoplasm itself. In modifying secretion it seems to act by lessening leucocytosis. Under its use muco-purulent secretions become mucoid and are soon normal.

Comparison with silver. The astringent and antiphlogistic effects of this drug are about the same as the silver salts. Compared with silver nitrate it may be said to be 1-10 as irritating, but in strong solutions or as a powder it never cauterizes. This must not be forgotten. The question as to whether the ichthyol effects can be observed is of slight interest. One can state that the alterant effects and the tendency to modify secretion is not as much due to the silver as to the ichthyol. However, if we acknowledge that the stimulant alterant and antiphlogistic effects represent the ichthyol, we still find the advantage with the ichthargan solution in that it is odorless. The preparation cannot be said to have an ichthyol taste, the petroleum flavor being modified by the metallic taste of the silver. It is clear that this remedy is not as useful as silver when cauterization is necessary, but it has the advantage in that it is non-irritant and non-cauterizant in fairly strong solutions.

If we add the good effects of ichthyol to the desirable effects of silver we have a preparation which can be used to great advantage in some cases. It will be found most useful in acute catarrhal rhinitis in a 4 per cent solution; in cases of hypertrophic rhinitis which are not particularly hyperplastic, and where obstruction results from disturbed circulation; here its antiphlogistic and alterant properties are valuable. In atrophic rhinitis cases if this remedy were used in weak solutions as an irrigation, 1:5,000, and afterwards in 4 to 10 per cent solutions in water or glycerin, it would seem par excellence, the remedy most indicated for atrophic membrane. In this disease we require some antiseptic, something to correct the circulation, a stimulant for the functional parts of the mucous membrane, and an alterative effect on the connective tissue. The leucocytic infiltration which is a prominent feature of atrophic cases is also benefited by ichthargan. It would seem to be clearly indicated in acute and chronic conditions of the naso-pharynx as well as inflammation of the pharyngeal bursa. It could not be used in the accessory sinuses except, perhaps, after operations, when it could be used in 10 per cent solution on cotton pledgets applied to the granulations which often appear. In tonsillitis and inflammations of the lingual tonsil, better results may be expected from the other silver salts. Ichthargan can safely be recommended in certain diseases of the larynx, in acute catarrhal laryngitis in adults in 4 to 8 per cent solutions sprayed over the parts, in laryngitis sicca in a 10 per cent glycerin solution, and in chronic atrophic tracheitis where there is abundance of dry saliva and scales.

In our experience ichthargan has acted well in acute rhinitis in a 2 per cent solution and in an ointment with vaseline. In hypertrophic cases the best results were from the use of a 4 per cent solution, the secretion in these cases being lessened, the purulent matter of the muco-purulent secretion disappearing leaving the secretion diminished in quantity and more mucoid in character. In cases of granulation tissue formation after operation a 4, 10 or 20 per cent glycerin solution has been of the greatest value in healing the exuberant granulations and modifying the secretion. Some of the most brilliant results have been obtained in these cases. In atrophic cases it seems to attain its most effective results. It acts like a charm since it combines the effects of the best two remedies. It may be said that in atrophic cases to arrest suppuration, remove scabs and stimulate the membrane to a healthy action, it is unequalled. We have treated at least fifty cases of this disease and

are in a position to state that the results with ichthargan have been more satisfactory than with any other form of treatment. The two following cases are taken at random to illustrate the effects of this drug.

Case I. Mrs. S. H., 24, for several years has been treated for atrophic rhinitis without deriving any marked benefit. The patient complains of dryness, itching, scabbing, constant desire to blow the nose, and bleeding if scabs are detached. On examination the nasal mucous membrane was dry and covered with scabs. There is atrophy of the turbinates on both sides, the region being covered with scabs and superficial ulcers. There are dry, hard scabs along the septum, leaving bleeding areas on removal. The nose was thoroughly cleaned and an application of a 4 per cent solution of ichthargan was used four times a week. The patient was given a 2 per cent ointment of ichthargan in vaseline to be introduced into the nose twice a day. The nose was not to be washed out at home. At the end of three weeks the distressing symptoms had disappeared, the scabs were gone and mucous membrane appeared healthy for an atrophic case. On examination two months later there were still no scabs, although the only treatment carried out had been the occasional application of the ointment at night.

Case II. Mrs. N.; 45, an old, neglected case of atrophic rhinitis. The patient complained of dryness, itching and disagreeable odor. Scabs were frequently discharged on blowing the nose. On examination the mucous membrane was found very dry and parchment-like with marked atrophy of the turbinates and atrophic nasopharyngitis and pharyngitis. There were small ulcers under the scabs along the septum and hard, dry scabs with ulcers on other parts. The treatment consisted in thorough cleansing of the nose and naso-pharynx, with a solution of boric acid. The crusts were removed with a cotton applicator. The ulcerated spots were touched with a 10 per cent watery solution of ichthargan, and the entire nose and pharynx sprayed with a 4 per cent solution. This was done four times a week for five weeks, at the end of which time the mucous membrane was more vascular, and the ulcers and scabs had disappeared. One or two small scabs remained along the septum. After this treatment the patient only required the use of a 2 per cent ointment daily. The patient was seen one month later and showed decided improvement. There was no odor, no scabs nor ulcers, and the patient was discharged with instructions to use the ointment once daily.

We have also used this remedy in watery and glycerine solutions in various forms of nasal ulceration, in aphthous disease, and syphilitic ulcers of the pharynx and mucous patches of the pharynx and mouth, in acute as well as syphilitic and tubercular laryngitis, and it has been as satisfactory as any silver preparation we have ever used. It would seem that this remedy were worthy of further trial in nose and throat diseases, and it is with confidence that we recommend it to all members of this Section.

SOCIETY PROCEEDINGS.

LARYNGOLOGICAL SOCIETY OF LONDON

Seventy-second Ordinary Meeting, March 7th, 1902.

E. CRESSWELL BABER, M. B., President, in the Chair.

The following cases and specimens were shown:

Case of Complete Recurrent Laryngeal Paralysis in a Male aged 24, which had Reappeared after a Period of Recovery.

Shown by Dr. Fitzgerald Powell. This patient was first seen on December 30, 1901, complaining that he had lost his voice quite suddenly on December 28. He could give no explanation as to the cause, unless it were strain from singing.

He further stated that in February or March of 1901 he had lost his voice quite suddenly in the same way. At this time he was not feeling very well, and three or four days after the voice became affected he had a severe cold, with rise of temperature, which was considered by his doctor to be due to influenza.

On this occasion he was under treatment by Dr. Bronner, of Bradford, and after three months his voice returned completely, and had kept quite strong until December 28 last, when he again lost it.

There was no history or evidence of syphilis, and nothing abnormal could be found in the chest. He complained of periodic headache and attacks of supra-orbital neuralgia. He had a spur on the right side of the septum nasi and a polypus causing nasal obstruction.

The most careful examination and investigation of his case failed to give the slightest explanation of the cause of what was found in the larynx, viz.: complete paralysis of his left vocal cord, which hung in the cadaveric position, the inner edge of the cord being curved with the concavity towards the median line.

So far as could be observed there was an entire absence of the usual causes which produce this paralysis.

As regards treatment, the spur on the septum had been removed and the polypus snared, and he was placed on iodide of potassium

up to twenty grains three times a day, and strychnine had been administred.

On February 19 the paralysis was still complete, but on March 5 there was some movement in the cord, and the patient stated that on February 22 his voice had suddenly improved and was now much better, though still hoarse and weak.

The same treatment is being continued.

Sir Felix Semon suggested that the most likely explanation of the occurrence of the paralysis in such a case was peripheral neuritis. The history in this case of influenza would be quite sufficient to account for the occurrence of the first paralytic stroke. The nerve being afterwards left in a weakened state, recurrence of the paralysis on slight provocation was no unlikely sequel; some extra vocal effort on the part of a patient or a cold would be sufficient to produce such a recurrence. It was now becoming a general opinion that peripheral neuritis was a rather frequent cause of laryngeal paralysis. He had lately read a very interesting monograph by Cahn, of Strassburg, endeavoring to establish that the most frequent cause of laryngeal paralyses in tabes was peripheral neuritis. At any rate it was a subject well worth any one's while to follow up.

Case of Hæmatoma of the Vocal Cord in a Female aged 29.

Shown by Dr. Fitzgerald Powell. The patient was first seen on March 4, complaining of hoarseness and loss of voice, which came on suddenly in February of this year. On examination of the larynx the left vocal cord was seen to move very sluggishly on phonation, and an extravasation of blood was seen in its whole length, forming what he might describe as a "hematoma of the cord." The nose, pharynx, and larynx were the seat of chronic inflammation. The patient had lost her voice three years ago, but it returned after six months' treatment.

Dr. F. de Havilland Hall asked if the attack of hemorrhage coincided with the menstrual period, or whether there was any catamenial disturbance, because most of these cases occurred in women, and either coincided with or preceded the catamenia, or else some menstrual disturbance.

Dr. Dundas Grant said it would probably be within the memory of some of the original members of the Society that he had showed a case identical with Dr. Powell's case at one of the earliest meetings, in which the hematoma recurred on several occasions. To the best of his recollection it was associated with menstruation, but he had not had an opportunity of looking up the notes, and would not

therefore speak with certainty on this point. The case was reported in the "Proceedings" of the Society.* Ultimately a small angioma near the junction of the anterior and middle third developed on the upper surface of the left vocal cord. The patient had gone to South Africa and he did not know what had happened since.

Dr. J. Donelan thought the case was the result of influenza, from which the patient was still suffering; she had the characteristic eye. He had had two cases under his care—both the patients were men—in whom the hematoma had followed influenza and severe coughing. Some of the subglottic veins were enlarged, and from these tracheal hemorrhage had also taken place.

Dr. Fitzgerald Powell regretted to say that though he had promised to inquire with regard to the menstrual periods he had forgotten to do so, but he would ask the patient the next time he saw her. So far as influenza was concerned, he supposed the last speaker hardly wished to infer that influenza was the cause of the extravasation of blood otherwise than by causing trauma from coughing.

A Modification of Mackenzie's Laryngeal Forceps for Removal of Growths in the Anterior Commissure and Drills for Draining Maxillary Antrum through Tooth Socket.

Shown by Dr. Fitzgerald Powell. The forceps were simply Mackenzie's laryngeal forceps with the cutting ends turned forwards. He found that they were useful in removing growths from the anterior commissure, and he thought others might find them useful in cases where there was a difficulty in removing these growths with the straight forceps. At the same time he did not claim any "property rights" in the instrument, which was Mackenzie's with the slight alteration mentioned. The chief point of interest in the drills was their size, the largest being the size of a No. 14 silver catheter; these drills, he thought, provided a means of curing the great majority of cases of empyema of the antrum. They made a large opening through the tooth socket, after extraction of the first molar or second bicuspid, through which a tube could be introduced, and through which the antrum could be freely curetted and washed out. He thought there were only a few cases in which what is known as radical operation was required.

*See Vol. I, p. 2.

The President thought that unless more than one tooth was extracted the drill and tube were rather large to get in without damaging the teeth at the sides of the socket.

Dr. St. Clair Thomson presumed that the exhibitor, in claiming that the majority of cases of empyema of the antrum might be radically cured by drainage through the tooth socket, included only those cases in which none of the other cavities were affected. At one time he himself was inclined to enlarge the alveolar opening, but he came to the conclusion that it was not the size of the opening that was of importance in effecting a cure, because when one had had considerable experience in opening antra, one found that there were many cases in which a large drainage through the alveolar border would never overcome the difficulties. He referred to those cases with dissepiments from the floor, or with the mucous membrane in so altered a condition that suppuration was liable to be started again by the first fresh infection. Perhaps Dr. Powell did not mean that the cases were permanently cured.

Dr. Dundas Grant, in referring to the alveolar perforation, said he generally made use of a hollow trephine, the advantage of which was that it cut out the piece of bone which one removed instead of sending it or the bone-dust into the antrum. On one occasion, however, when he fancied he must have used almost excessive speed with it, there was actually a sequestrum of a little piece of bone around the trephining hole. Others had observed this fault as well, but he did not know the cause of its appearance. He thought it might be due to the intense heat generated; he did not use an electric motor, but a foot-drill.

With regard to the forceps, he thought the variation a most excellent one. If criticism *a priori* were permissible, he would say that the vertical shanks were rather too long; the upper angle would impinge upon the hard palate in a good many cases. Otherwise the instrument was an admirable one.

Dr. Herbert Tilley said that an almost precisely similar forceps had been in use for the last two years at the Throat Hospital, Golden Square, and was introduced there by Dr. Lack.

Dr. Lambert Lack said the forceps very greatly resembled some he had had made, and which had been in use at the Throat Hospital for over three years. In addition to the curve at the tip his forceps had an obtuse angle, which he thought a great additional advantage, as it held the epiglottis out of the way.

Dr. Fitzgerald Powell, in reply to the President's remarks on the

drill, said that it would be clearly seen in the example which he showed them, where the hole was made by the largest instrument, which was larger than that of a No. 14 silver catheter, that the teeth were not impinged upon in any way. Cases were occasionally met with in which the teeth were so close together that there was some difficulty in this respect, but in the vast majority of cases one obtained a good large opening in the way he advocated, through which drainage could be thoroughly effected, and through which the antrum could be curetted.

In reply to Dr. St. Clair Thomson, he said that if the ethmoidal sinuses were affected, it would be necessary to curette the sinuses at the same time that the antrum was being opened. One came across cases occasionally in which it was necessary to open the anterior wall and curette the sinuses very freely, but in all ordinary cases—which constituted the great majority—the measures he recommended were sufficient to effect a cure. With regard to Dr. Tilley, he only wished to emphasize that the forceps he showed were Mackenzie's laryngeal forceps, modified by having the cutting point turned forward, and they were absolutely and totally different from Dr. Lake's forceps, which were short and very light, with an obtuse angle instead of the right angle of Mackenzie's, and were practically only suitable for children.

In using Mackenzie's forceps he had found some difficulty in removing growths in the anterior commissure, and it occurred to him if the points could be turned forward the growths could be more easily reached. Hence the forceps he now showed.

Case of Paralysis of the Left Vocal Cord.

Shown by Dr. Willcocks. The patient, a postman act. 45, had complained of cough and huskiness of the voice since last Christmas. On examination the left vocal cord was found to be completely paralyzed, both cords were white, and there was no local swelling in the larynx. There was no history of syphilis, and no signs of any source of intra-thoracic pressure, such as aneurysm or tumor.

Dr. de Havilland Hall said that though they must remember the possibility of peripheral neuritis in this case, yet there was less evidence of it than there had been in the case of Dr. Powell's patient. At the age of forty paralysis of the left vocal cord indicated very possibly the existence of an aneurysm. He called to mind a case of Dr. Fincham's at the Westminster Hospital, where the only sign of an aneurysm for many months—in fact, nearly a year—was

the cadaveric position of the cord. Eventually the patient developed well-marked physical signs of aneurysm, from which he died. In this case there might be no physical signs of aneurysm for many months to come, but they must still bear in mind the possibility of its being aneurysmal.

Mr. P. de Santi had shown a similar case to the Society only two meetings ago, in which, if he remembered correctly, Sir Felix Semon had considered there was an aneurysm in spite of the absence of the physical signs. The patient, a woman, was skia-graphed, and a well-marked dilatation of the arch of the aorta was easily made out; since then he believed the patient had been under the care of Dr. de Havilland Hall.

Sir Felix Semon had seen comparatively often the production of laryngeal paralysis in cases in which the aneurysm was so small that there were practically no physical signs to be obtained. The absence of physical signs of aneurysm in the chest was certainly no proof of its non-existence. He recollected a case which would serve as a very apt illustration. Many years ago the head-master at one of the big public schools consulted him on account of frequent fatigue of the voice. On examination of the throat he found paralysis of the left abductor. He then examined the chest, and thought there was possibly a very little dullness over the lower part of the sternum. Barring this dullness, there were no physical signs whatever; still, he suspected the presence of aneurysm. The patient was induced to see Dr. Ord, of St. Thomas' Hospital, who found the same condition and agreed entirely with the speaker as to the probable existence of aneurysm. The patient was at the time just about to start for a tour in Switzerland, where he intended spending the holidays. Both Dr. Ord and he advised him to go home and rest, and undergo a course of Tufnell's treatment. Dr. Ord knew the family medical attendant, and wrote to him expressing their joint opinion as to the case, in reply to which he received a letter saying that the writer wished devoutly there were no consultants in London, for they needlessly frightened patients, and that he had strongly advised the patient to proceed with his arranged plans and go to Switzerland. This was done, and the patient died four weeks afterwards from hemorrhage, caused by the bursting of a small aneurysm, which had, indeed, been present. The moral was obvious.

Dr. Donelan said, in reference to the remarks just made by Sir Felix Semon, he had shown to the Society in June, 1901, a sketch

of an aneurysm of the aorta in which paralysis of the left vocal cord was the only physical sign during life. The patient was an Italian man aet. 39, whom he had been asked to examine. He considered that the paralysis was probably due to aneurysm. On the morning of the day following this examination the patient was suddenly seized with what seemed to be angina pectoris, became rapidly collapsed, and died within two hours of the seizure. The post-mortem showed a small oval aneurysm on the posterior-superior aspect of the aorta, immediately outside the origin of the left subclavian, compressing the recurrent nerve.

Case of Laryngeal Stenosis due to Cicatricial Contraction in Interarytænoid Region.

Shown by Mr. H. Betham Robinson. The patient, a young man aet. 20, was brought to him on account of the difficulty in breathing on exertion.

According to the history he had had a severe attack of what was stated to be diphtheria some years ago; after it he had had no voice, but this had come back very slowly. Eight months ago the voice was only a squeak, but recently there had been great improvement, so that now there was only huskiness.

Examination showed a very large perforation of the nasal septum, involving both bone and cartilage, and loss of the uvula. In the larynx there was slight catarrhal reddening of the vocal cords, but the marked feature was the loss of abduction of the cords on deep inspiration with some stridor. On phonation the cords came together to the mid-line, except between the arytenoids. This laryngeal condition was due to a cicatricial web passing between the arytenoids, evidently the result of previous inflammation. Although no history could be obtained, syphilis explained the three lesions mentioned.

The President said the question was whether the cause of the condition was syphilis or diphtheria; the nasal trouble might, he thought, be caused by the latter, and possibly the laryngeal trouble also. He suggested that the man ought to have tracheotomy performed as soon as possible.

Sir Felix Semon drew attention to the adhesion between the posterior ends of the vocal cords in the very small part just visible above the interarytænoid fold. Supposing the cicatrix had been a little bit lower, everybody would have looked on it as a case of bilateral paralysis of the glottis openers. This case reminded him

of the well-known case of Sidlo's, of Vienna, in which a similar diagnosis was made, and after death a cicatrix was found on the posterior wall of the larynx. The case to which he referred was extremely interesting as showing how careful one had to be, if the cords were lying close together, not to rush to the conclusion that the condition must needs be of nerve origin, and to remember the possibility of a mechanical origin. As to the particular case under discussion, he thought the perforation in the nasal septum and the absence of the uvula would make him very skeptical in regard to the diphtheritic origin of the case; there was, on the contrary, strong evidence in favor of syphilitic mischief.

Dr. Dundas Grant thought it was very likely a case of perichondritis, such as occurred in typhoid fever; there was decubital ulceration from the pressure of the cartilages against each other. If the man were left in statu quo he was in considerable danger, but he did not consider that the operation for the relief of these cases was very satisfactory.

Dr. St. Clair Thomson said that in the absence of reliable history the evidence in favour of syphilis was not more than a suspicion. If the perforation in the nose occurred when the man was not having any treatment, it was very usual to find retraction afterwards causing some falling in of the nose, and even retraction round about the perforation, just in the same way as was found with the soft palate and uvula in inherited syphilis. It might be a coincidence that the syphilitic process in the larynx took place exactly in the middle line, but he thought it more likely to be of diphtheritic origin. He agreed with the President in thinking that tracheotomy was urgently called for.

Mr. Robinson, in reply, thought all the lesions were due to syphilis, and could not agree with the diphtheria explanation put forward. Of course, if they wanted to explain the condition by two causes, diphtheria and syphilis would do, but such was unnecessary when one common cause was sufficient. With regard to the question of operation, the lad was a pupil-teacher, and the whole matter had been put clearly before him and his parents, explaining the risks he ran. They were, however, unwilling, bearing in mind that he was dependent on his voice for his living, to have anything whatever done, and there the case must rest.

Sections of Tuberculous Growth of Mucous Membrane of Right Middle Turbinal in a Man aged 50.

Shown by Dr. Adolph Bronner. The patient from whom this growth was removed was first seen on June 20, 1901. He had had nasal obstruction off and on for some years, with discharge into throat; he could never smell well, but taste was fairly good. He gave a history of an ulcerated throat one year previously. The nose had been worse for some weeks, with pain over the bridge. He had noticed a rather offensive smell from the right nostril for two or three weeks.

The apex of one lung was affected. Both nostrils were blocked by swollen mucous membrane of lower turbinals. This was removed by a snare and galvano-cautery.

On July 25 the right middle turbinal was much enlarged, and on it a large patch of ulcerated mucous membrane. A piece was removed by snare for examination. Trichloracetic acid was applied and aristol insufflations were ordered.

On September 24 there had been very little discharge or bad smell or pain for three to four weeks, and the nares were patent. The right middle turbinal was still enlarged, but the ulceration had healed.

The Clinical Research Association reported: "This growth consists of tuberculous granulation tissue in which are many miliary tubercles with large giant-cell systems."

Dr. St. Clair Thomson suggested that Dr. Bronner be invited to give a specimen to the museum, because, as far as his recollection went, it was extremely rare to see a specimen of tuberculosis of the middle turbinal. The best article he knew on primary tubercle in the nose was that written by Mr. Steward in the "Guy's Hospital Reports," Vol. LIV, where it was pointed out that primary tubercle in the nose generally attacked the septum, and that next in frequency came the inferior turbinal, but that the middle turbinal was very rarely subject to tuberculosis.

Case of Tertiary Intra-Nasal Syphilis in which the Right Frontal Sinus had been opened twice with Negative Results, in a Married Woman, aged 48.

Shown by Mr. P. de Santi. The patient was first seen five weeks ago, complaining of great pain at the back of the nose and head, also of a foul discharge from the nostrils and occasional discharge of pieces of bone.

She had been married seventeen years, and had had three miscarriages and one seven months' child born dead.

Nine years ago she first noticed a discharge of small hard lumps of a greenish color from the left nostril, also occasional swelling at the root of the nose; soon afterwards a similar discharge occurred from the right nostril, and the discharge, which had included frequently pieces of bone, had continued ever since, and had got worse and worse. Three and a half years ago she had had paralysis of left facial nerve, which came on suddenly, and cleared up entirely after about eighteen months' time.

In 1901 the patient was an in-patient at University College under Mr. R. Johnson for nasal discharge and headache. There was pain over bridge of nose and right frontal sinus, slight diminution to tactile sensation over left side of body, and slight apparent weakness of facial muscles on the left side. The right frontal sinus and maxillary antrum were explored, and found to be healthy.

The patient left the hospital unrelieved, and on September 25, 1901, was admitted into Charing Cross Hospital, under Mr. Waterhouse, and the right frontal sinus was opened, a little purulent material exuding; the mucous membrane was in a thickened and catarrhal condition. An attempt to pass a small rubber tube down the infundibulum was unsuccessful, and a strip of gauze was substituted. The frontal sinus was packed with iodoform gauze, and the usual dressing applied. After the third day a No. 2 catheter was passed down infundibulum, and this was done daily, the parts being washed out with boracic solution. The fetor became less, and after a few days' treatment the patient passed a large mass of necrosed bone, which consisted of a part of the lateral mass and ethmoidal cells. The frontal wound was granually allowed to heal. Patient was discharged on October 10, 1901, unrelieved. She now complained of intense headache, loss of sleep, diarrhea, and a half-choking sensation. The pains in the head appeared to be referred to the back of the nose and frontal regions.

Examination of the nose showed large greenish-black sloughs in the posterior region of the intra-nasal cavity; there had been extensive destruction of the bony lateral masses, but the septum was intact.

The patient's condition, in Mr. de Santi's opinion, was due to syphilis, and she had had large doses of iodide of potassium, but without benefit. Suggestions as to operative treatment were invited.

Dr. Dundas Grant said the woman seemed to be in a very serious condition. He strongly suspected tertiary changes were taking place in the sphenoid, and probably there was a sequestrum at the junction of the sphenoid and the vomer; he thought Mr. de Santi might explore this region with his finger. He had had a similar case to this under treatment, which consisted in taking the patient into hospital and giving her the good feeding up which her circumstances at home rendered impossible. He was giving her inunctions of mercury with iodide of potassium and opium internally. He recommended the same treatment to Mr. de Santi's patient.

Dr. Herbert Tilley agreed with Dr. Grant as to the possibility of deep-seated bone mischief in the sphenoidal region, and cited a similar case which died of basal meningitis after temporary improvement by mercurial inunctions and constant nasal douches. The pus between the middle turbinal and the septum, the pain on the top and at the back of the head, together with deep-seated pain in the right eye and frequent disturbances of vision, were all symptoms very suggestive of suppuration in the sphenoidal sinus.

Mr. de Santi, in reply, said the first point to be mentioned was in regard to the diagnosis which was raised by Dr. Grant. There could be no doubt that the woman was suffering from tertiary syphilis of the nose, and that the disease had penetrated as far back as the region of the sphenoid bone. Nor was there any doubt that her condition was a somewhat serious one, and that she must undergo some further operation. She should, he thought, be examined thoroughly under an anesthetic, and the posterior nares be carefully explored with the finger, and, of course, what might be done afterwards depended on what might be found. If the sphenoid bone were necrosed and firmly fixed, it would not be safe or wise to try and get the necrosed bone away, unless it would come away with the exercise of very little force. If a sequestrum had formed, as he feared, its removal might be quite easy, or, on the other hand, difficult and dangerous.

When the patient first went to University College Hospital, and was under the care of Mr. Johnson, she had very intense headache, and there was considerable pain over the bridge of the nose and the right frontal sinus. The patient localized most of the pain in the head on the right side of the frontal bone, and the area of tenderness to pressure was over the right frontal sinus, and he supposed these were the reasons why the right frontal sinus was opened. Moreover there was a nasal discharge consisting of thick

greenish pus, and this was seen mostly in the middle meatus. He could not go further than that as to the reasons which probably prompted Mr. Johnson to operate on the right frontal sinus. Later the patient was at Charing Cross Hospital, complaining of similar symptoms, only they were aggravated. It was only fair to Mr. Waterhouse to say with regard to the second operation on the frontal sinus, that although the woman now denied it, it was against his advice that the operation was undertaken. The patient insisted on Mr. Waterhouse doing it, and it was done under protest. One of his colleagues at Charing Cross, Mr. Bloxam, felt certain there was nothing the matter with the right frontal sinus before it was operated on again by Mr. Waterhouse, but was of opinion that there was a mass of dead bone at the back of the nose.

He could not go further into the subject of the indications for and advantages of the frontal sinus operation, but as regards this particular case, the reasons for operation was the pain referred to the right frontal sinus, which was constant and excessive before the sinus was opened.

A Case of Angioneurotic Œdema of Right Hand With Recently Developed Attacks of Difficulty in Breathing.

Shown by Mr. P. de Santi. The patient, a married woman æt. 26, was in the London Hospital four years ago with swelling of the right hand and forearm, and angioneurotic oedema was diagnosed. The treatment consisted in elevation of the limb.

Since then she had had several further attacks, always of the right hand. The attacks began with a feeling of tightness in the hand, rapidly followed by great swelling of the fingers, hand, and forearm, the fingers becoming almost black in color, and the rest of the affected parts bluish red. The attacks lasted a variable time, and then the parts returned to the normal. There was no particular periodicity in the attacks, and no family history of similar conditions. About six weeks ago the right side of the face became swollen, and for three weeks the patient was unable to open the mouth properly, having to live on slops. Then followed suffocative feelings in the throat, which occurred both by day and night, the patient feeling as if the throat were being tightly gripped. The attacks were slightly relieved by adopting the sitting posture. The hand had not been affected for four months.

Examination of the larynx revealed no oedema or abnormal condition. The cause was brought forward as, in these cases of angio-

neurotic oedema, of which Mr. de Santi had seen two, sudden oedema of the larynx proving fatal might occur.

Osler had knowledge of one family extending to five generations in which twenty-two various members had been attacked by angioneurotic edema, and in which two had died of edema of the larynx. This disease was characterized by the sudden onset of local edematous swellings, more or less limited in extent and of transient duration. The parts attacked were usually the face, back of the hands, the buccal or pharyngeal mucous membrane, or the larynx. Mr. de Santi would be glad if any members could inform him if they had had any experience of throat trouble in these cases of angioneurotic edema—otherwise called Quincke's disease.

Dr. de Havilland Hall thought this an extremely interesting case. He had a case under his care which he saw from time to time, the patient being a lady of forty-four or forty-five years of age, who was subject to attacks of angioneurotic edema of the neck and buccal mucous membrane, and as she had had on one or two occasions great difficulty in breathing he inferred that the symptoms extended to the larynx. Unfortunately he had never been able to see the larynx affected; but usually he saw the buccal mucous membrane in an edematous condition. This patient was undoubtedly a gouty subject, and she had derived most benefit from a course of treatment directed to the gout, and from alkalies. She was formerly a patient of his late colleague, Mr. Bond, who had been treating her with bicarbonate of potash and bark with considerable benefit, and occasionally doses of blue pill. He had not seen the patient now for three or four months, but he had heard that the attacks were getting less frequent. He sent her to Llandrindod Wells for a course of treatment, and she had come back very much better. He had seen another case in a boy who had no throat complication, but who was subject to attacks of angioneurotic edema, which were located in the back of the left hand and wrist. It was an interesting case, as the patient had developed cyclic albuminuria. When in the recumbent position there was no albumen in the urine, but on getting up and about a trace was found. He thought this combination of the two conditions—angioneurotic edema and cyclic albuminuria—in the same patient a matter of some interest.

Dr. Edward Law thought that some of the members might remember that five or six or seven years ago he had brought before the Society a case of well-marked Quincke's disease.

Case of Rapidly Recurring Papilloma of the Larynx.

Shown by Dr. Lambert Lack. The patient, a Swiss waiter aet. 21, had suffered from hoarseness for four months. When first seen six weeks ago there was what appeared to be an ordinary fairly large papilloma on the anterior part of the right vocal cord.

This was at once removed under cocaine. Subsequently there was considerable congestion of the vocal cords, which increased during the following three weeks, until both cords appeared red, thickened, and irregular, resembling the "fleshy granulating" cords often seen in tubercular disease. The patient was "run down," and had considerable cough and expectoration. He was now much better, and the local condition had cleared up, but on examining the larynx it would be seen that the growth had recurred, and there were at least two distinct fresh growths on the other cord.

Mr. Lake said he could not help thinking that in this case if Dr. Lack removed the growth, the careful bacteriological examination of a portion of such a rapidly growing papilloma might throw some light on its causation; micro-organisms that were found might serve as an important aid.

The President, from a cursory examination, thought the case was suitable for the application of the galvano-cautery.

Case of Traumatic Tracheal Obstruction.

Shown by Dr. Dundas Grant. Edith C—, aet. 22, was first seen on February 13, 1902, complaining of difficulty and loudness in breathing, especially when hurrying. These symptoms had existed since an accident at three years of age, when she fell on the blade of a knife and punctured her windpipe. She had no difficulty in breathing at night, but the dyspnea had been getting worse during the last six months. It was worse after food. There was no indistinctness in her speech, but a slight apparent effort. The left vocal cord was completely fixed, and without doubt the left recurrent laryngeal nerve must have been injured. The extremely late period at which the narrowing had more strongly asserted itself was difficult to explain; it was hardly likely that there was anything in the way of a polypoid granulation, but more probably cicatricial contraction. Dr. Grant had advised that she should come into the hospital for a more thorough examination, and if possible for the introduction of a tube into the trachea for direct inspection.

Case of Rhinorrhœa in a Girl aged 9.

Shown by Dr. Cathcart. Since the patient was two years old she had had a thin watery discharge from both nostrils, which caused excoriation of the upper lip. During the last six years she had twice been operated on for adenoid growths, and on four other occasions the nose had been examined under an anesthetic and either curetted or cauterized with nitrate of silver or the electro-cautery.

Everything in the way of drugs had been tried, both internally and locally, but the discharge still continued.

Dr. de Havilland Hall had had a case at Westminster Hospital, and on measuring the fluid he found it amounted in the twenty-four hours to nearly a pint. The fluid was clear and limpid, and came undoubtedly from both nostrils, and not from any other part. At that time he had thought the case due to a vaso-motor condition. His patient had derived most benefit from mustard footbaths with morphia and atropine. He had originally been under his care sixteen or seventeen years ago, and he had seen him quite recently—during last week,—and he had now nasal polypi. When he felt the attacks coming on he put his feet into the mustard foot-bath and took a dose of 1 minim atropine and 5 of solution of hydrochloride of morphia. In Dr. Cathcart's case he would feel inclined to try a weak spray of adrenalin solution.

Dr. St. Clair Thomson said it was very rare to find this condition of uncomplicated nasal hydrorrhea in a patient so young as nine years. The cases which had come under his observation had been much older. As to their treatment, speaking from personal experience, he thought it extremely unsatisfactory. By giving placebo treatment many cases would undergo a temporary spontaneous cure, but the symptoms were quite likely to come on again at any time. Yet a certain number of cases seemed to be relieved by the use of atropine, particularly if it was combined with Liq. Strychninae, as suggested by Lermoyez, whose contention was that the atropine checked the glandular secretion, and that the strychnine was beneficial to the vaso-motor paresis. He had given a pill containing extract of belladonna, quinine, and extract of nuxvomica. The results were uncertain from the use of adrenalin, for cases were published in which the adrenalin, instead of being beneficial, made the patients very much worse. He had heard of a city man who particularly wanted to attend a public meeting, and

had adrenalin administered to him in order to tide him over the meeting, with the result that he was so much worse that he was unable to go at all, whereas without the adrenalin he could have got through with two or three handkerchiefs. He would like to hear from other members what results, even if negative, had followed the use of adrenalin in their hands. In more than one case in which he had explained the condition of affairs, and refrained from local treatment, the patients had gone elsewhere, and had a great deal of the galvano-cautery, but with what results he did not know. General treatment and that of hydrotherapy at different health resorts had at the least an elevating effect.

The President said he could not suggest the same treatment he had recommended for Mr. Lawrence's patient at the last meeting—the application of the continuous current externally to the nose. He wished to add that adrenalin required to be used carefully; if it was applied too strong it might produce prolonged sneezing. He employed a solution of 1 in 10,000 of adrenalin chloride to contract the nasal mucous membrane.

Sir Felix Semon said he had lately frequently used adrenalin in view of the many recommendations bestowed upon that remedy, and he found that for about an hour or two after its administration it produced a stoppage of secretion and feeling of absolute dryness in the nose, followed by infinitely greater discharge than previous to its use.

Mr. Waggett considered that it was worth while to make trial of the treatment of Lermoyez in its entirety, for he had had three or four lady patients under his care who had taken the trouble to pursue the treatment regularly, and had obtained complete relief of hydrorrhea. Whether or no this was to be permanent he was unable to say. The syrup used contained strychnine and atropine (vide "Journal of Laryngology," Vol. XV, p. 442.)

Dr. Law, replying for Dr. Cathcart, said that adrenalin had been tried, but without success, also many other remedies.

Dr. Bronner asked if any member had tried the desiccated suprarenal extract, which was in the form of a powder, and was used as a snuff. He thought it acted better than the solution of adrenalin. It was used 1 to 10 with boric acid and a little menthol.

Case of Atrophic Rhinitis in which Melted Paraffin had been injected into the Inferior Turbinate Bodies with Good Results.

Shown by Mr. R. Lake. The patient, a woman, aet. 25, had been afflicted with fetid atrophic rhinitis for many years. Crust for-

mation had been got under the usual treatment, but the patient was dissatisfied, as she felt no air passing down the nose. This suggested to him the idea of contracting the passages by making an artificial inferior turbinate by means of submucous injections of paraffin.

The injections were made under the posterior surface of the inferior turbinate, about m v each time with intervals of one week. The total increase of length obtained was not great, but the relief was most satisfactory to the patient.

The needle required was one of fair calibre, three inches in length, and attached to the syringe by means of a screw. The syringe employed was one with metal bands connecting the metal ends and worked with a screw piston to overcome the friction caused by the long needle.

The President asked Mr. Lake if the patient had benefited as far as the symptoms were concerned. Dr. Dundas Grant said that the turbinated bodies looked an excellent size at present. He asked whether a local anesthetic was required, and whether cocaine was contra-indicated, owing to the fact that the contraction it would produce would militate against the successful injections.

Mr. Waggett thought the most remarkable point about the case was the color of the inferior turbinals, which was now practically of a normal tint. He had closely questioned the patient, and from her replies he had gathered she must have enormously improved. He heartily congratulated Mr. Lake on his very ingenious new method of treatment.

Dr. Lambert Lack said that although the patient herself was positive that she had derived great benefit, the treatment seemed to him utterly irrational and against the modern ideas of the pathology of the disease. He thought much more evidence was required before this treatment could be accepted.

Mr. Lake, in reply, said he had used cocaine, and that it answered very well. With regard to the symptoms, the girl bothered him after the crust formation ceased, because she would not blow her nose; she had plenty of room, but she could not feel air pass down the nose. He was pleased to hear Dr. Lack's strictures, because it was a question of some considerable interest as to what was the pathology of the disease. People talked of the destruction of the turbinals as if this were part of the disease, but why did they disappear?

In the present case the patient expressed herself as more com-

fortable with the substituted inferior turbinals, which merely relieved the symptoms. He did not feel so confident in the present pathology of atrophic rhinitis as described in the text-books to quite accept the explanations given by them as correct.

Papillomatous Growth on the Posterior Edge of the Vomer.

Shown by Dr. Herbert Tilley. The patient, an adult, male, had been under treatment for almost complete nasal obstruction in the left nostril. In the course of examination a small whitish growth the size of a yellow pea was seen by posterior rhinoscopy situated on the posterior edge of the vomer about the middle of its length. The growth was dead white in color, contrasting very markedly with the normal redness of surrounding structures.

The growth had not been touched by finger or instrument, and hence the exhibitor could say nothing of its feel or consistence. He had once seen a definite papilloma growing from that spindle-shaped mass of mucous membrane so often seen on the posterior edge of the vomer, but had never met with a condition similar to that in the case exhibited. He regarded it as a harmless curiosity.

The President said in regard to this case of growth on the edge of the vomer, he would not like to say without feeling it with his finger whether it was papillomatous or cartilaginous in character. He thought the growth different from the ordinary swellings seen near the posterior margin of the vomer.

Sir Felix Semon said that in that part of the vomer one often saw little symmetrical thickenings. This growth might simply represent an excess of the ordinary thickening.

Case of Syphilitic (?) Disease of Larynx simulating Malignant Disease.

Shown by Dr. Herbert Tilley. The patient was a well-proportioned man aet. 28. For six weeks he had complained of "hoarseness," and for the past week of pain on swallowing, which shot from the throat towards the right ear.

The irritation in the throat caused a cough, but at no time had he expectorated blood. The patient had syphilis about five years ago.

The larynx was uniformly congested, but the right vocal cord was motionless on phonation, and there was considerable, but uniform, swelling of its posterior half. Below the level of the cord for about half an inch in a vertical direction, well-marked ulceration was seen; there were no prominent edges or projections from

the surface of the ulcer. The right arytenoid cartilage moved on phonation. A hurried examination of the chest had been made, but so far as it went no evidences of tubercular mischief were obtained. The appearances in the larynx simulated malignant disease, but at present the patient was being treated on the hypothesis that the lesion was a syphilitic one.

Dr. Fitzgerald Powell did not quite catch whether or not the chest had been examined. It seemed to him, from the appearance of the condition, it was much more likely to be tuberculosis than either syphilis or malignant disease. The larynx was pale in color, there was present to a fairly large extent cough and expectoration, according to the mans own account. He seemed to have been having night sweats, and showed other symptoms of tubercle; under these circumstances he thought that until the sputum had been examined, and they knew the condition of the chest, it was almost impossible to come to a definite conclusion with any certainty as to the condition, but he believed it to be tubercle.

Suppression of Consumption.—R. C. BANKSTON, M. D. (Birmingham, Ala.)—*Atlanta Journal-Record of Medicine*, Jan., 1902.

After reviewing the established and probable factors in the distribution of tuberculosis, the authors contend for a committee of five physicians, to be known as the Committee or College of Science, to meet at various places and study the disease and conditions productive, and recommend governmental plans for its suppression, this committee to be supported by the state, and each state commission reporting to a supreme one established by the United States government. The standing and ensemble of the latter to be on a par with the Supreme Court. There should be two sittings annually, and the members should devote their whole time to their duties. The members should hold office for ten years and the terms should be so arranged that one member should go out every second year.

There should be a Department of Public Health and a chief officer over all.

F. C. E.

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It is our purpose to furnish in this Department a complete and reliable record of the world's current literature of Rhinology, Laryngology and Otology.

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SELECTED ABSTRACTS.

Case of Nasal Sarcoma, with Remarks.—DUNBAR ROY, M.D.
(Atlanta, Ga.).—*Record of Medicine*, Jan., 1902.

The case is reported for two reasons: Because of the probable transformation of a benign into a malignant growth by traumatic irritation, and the surgical method resorted to in the treatment. The author quotes Nasse, who declares that trauma is more frequently the cause of sarcoma than any other tumor. Wurdemann and others have reported cases in which the brunen seemed to be transformed into the malignant, through instrumental manipulation, and the author is of the belief that the following was such a case:

Miss B. came to him in June. Was well up to February previous, when she consulted her family physician, who diagnosed polyp, and removed it with scissors. Growth returned shortly and was again removed. Very soon the nasal cavity being again filled, she went to a neighboring city to consult a surgeon. He declared it a surface polyp, and removed and curetted it several times during a month, even tearing it away. Operations were attended with excessive hemorrhage. At the end of two months the patient met me with the assurance that the surface would soon heal, but the growth increased, swelling the face enormously, and extending to the roof of the mouth. When she consulted the author, five months after seeing the first surgeon, the antrum was also involved, and the case was pronounced hopeless. Homer Coley's mixture of erysipelatos toxins were employed with no change in the growth. Later a consultation with Dr. Nicholson decided, as a last resort, to ligate both carotids, which was done by Dr. Nicholson June 19. Patient reacted, but only a temporary improvement seemed noticeable. She grew weaker daily, and died August 10, seven months after the first operation. The question as to whether the growth was malignant in its incipency cannot be definitely decided, but it is open to question.

The case antagonizes some authorities, Kyle and others, who declared that nasal sarcoma are of slow growth. It is also opposed to the advocates of ligation as a means to shutting off the blood supply to sarcomata. The author defines his opposition to irritation of bleeding nasal growths, and emphasizes the necessity for early microscopic examination in suspicious cases. F. C. E.

An Operation for the Cure of Frontal Sinus Suppuration.—W. THETWELL THOMAS, F. R. C. S.—*Liverpool Med. Chirurg. Jour.*, Sept., 1901.

The author discusses the well known symptoms of frontal sinus suppuration and points out that the affection is never uncomplicated by similar disease in the ethmoidal cells.

In dealing with the diseased mucous membrane lining the sinus, he objects to the use of the curette as liable to expose the underlying bone to septic otitis and he insists that the chronicity of the suppuration is not due to changes in the mucous membrane, but to the confinement of septic organisms in a moist and warm situation, which organisms, if freely drained away, will allow of the mucous lining returning to its normal condition.

Having opened the sinus by the usual incision and having removed any polypi, for which "exuberant granulations must not be mistaken," a Pana probe is passed downwards via the frontal nasal canal out from the corresponding nostril. A strong loop of silk is secured in the upper end of the probe while its lower end is tightly seized by pressure forceps so that when the probe is withdrawn in an upward direction the forceps are guided to the floor of the sinus out which they are made to project. By opening the forceps anteroposteriorly, the ethmoidal cells are crushed so that a free opening is made between the nose and sinus.

A strong, perforated rubber tube is next passed downwards from the sinus to the nose, is made to extrude beyond the nostril and the two free ends anchored together on the side of the nose. The external wound is then sutured in its entire length with the exception of that portion of it which is occupied by the rubber tube.

For 7 to 9 days the tube is moved upward and downward daily and syringed with some weak antiseptic solution. Then its upper end is drawn into the sinus, leaving only the silk loop externally and having cut off the lower end of the tube flush with the nostril, syringing is again carried on until the wound fistula is closed by granulations, when the silk loop is cut and the tube finally withdrawn. "The wound heals soundly in a few days," and nasal injections are continued for a few days later. The author gives very few details of some four or five successful cases, but does not mention whether by "cure" he means entire cessation of discharge from the sinus. It would have been interesting to know what other intra-nasal lesion these patients exhibited and whether the author in any of the cases removed the middle turbinal bone.

TILLEY.

The Hemorrhagic Diathesis in Relation to Operation on the Nose and Throat.—E. HARRISON GRIFFIN.—*Med. Record*, Dec. 1901.

In questioning patient, the author has failed to obtain a history of "bleeder," but such information has always been given after operative intervention.

Five cases are reported in which the unpleasant symptom of hemorrhage appears. Morphine has been found to act better to control the bleeding in a nervous case than any other drug.

It is important to question closely the patient before operation and to go into detail.

M. D. LEDERMAN.

Laryngeal Paralyzes and their Importance in General Medicine.—

J. W. GLEITSMANN (N. Y.).—*N. Y. Med. Jour.*, Dec. 14, 1901.

In a very interesting and scientific paper upon this difficult subject, the author has devoted much attention to the anatomical and physiological aspect of the disease under consideration. He dilates upon the experiments of Krause, Semon, Storsley, Russel and others, and points out that the planatory cortical centre in dogs, as shown by Krause, is located at the descending surface of the prefrontal convolution. Irritation of one of these areas by electricity, is always followed by symmetrical bilateral adduction of the vocal cords, phonetic movements, which also take place when one phonatory centre has been experimentally removed or destroyed by disease, and a positive indubitable case of unilateral paralysis due to cerebral lesion has not yet been reported.

Adduction of the cords (phonatory act) can also be produced by stimulating a small area in the bulbus, which, confined with the fact that acephalous monsters are able to cry, shows that phonation has a limit center in the bulbus.

The superior laryngeal nerve is the sensory nerve of the larynx and only sends motor fibres to the cricothyroid muscles, while the recurrent is the motor nerve for all the intrinsic muscles of the larynx, and supplies the adductors as well as the abductors.

The normal state of the abductor muscles during life is partial contraction, consequently the glottis is wider during quiet respiration than in the cadaveric position. When abductor paralysis exists, we should always search for a lesion of the nerve trunk.

An abbreviated abstract does not do the paper justice, and a perusal of this article in toto is recommended by the abstractor.

M. D. LEDERMAN.

The Principals of Treatment of Tubercular Laryngitis.—ST. CLAIR THOMSON (London).—*Journal of Laryngol.*, Oct. 1901.

In an interesting paper upon this subject, the author arrives at the following conclusions, based upon his own personal experience, plus the opinion of other observers:

1. Pathology and clinical experience show that in the majority of cases the focus of infection is near or in the crico-arytenoid joint.
2. Many cases only present themselves at a stage when the possibility of effecting a cure by local measures is quite untenable.
3. The principle of *primum non nocere* should be constantly kept before us, as many measures which have been tried in this affection have only distressed the patient and hastened the disease.
4. In the light of present knowledge and therapeutic resources, the most rational principle is to try and make an early diagnosis of the disease while in an incipient stage—any persistent or suspicious laryngeal catarrh should be treated seriously in even a presumptive diagnosis.
5. Once diagnosed, the patient should be treated on the principles laid down in the modern method of sanatorium treatment.
6. Symptomatic treatment should be directed to an irritative, catarrhal or obstructive condition of the air passages.
7. In addition, silence should be enjoined, the disuse of the voice being proportionate to the degree in which the focus of infiltration approaches interferes with the arytenoid joint.
8. In cases where the situation or extent of disease do not warrant an expectation of complete arrest of the process, treatment should be symptomatic, and in many such cases the sanatorium treatment is uncalled for.

M. D. LEDERMAN.

An Artificial Larynx.—G. T. HANKINS (Sydney, Aust.)—*Australas. Med. Gaz.*, Jan. 20, 1902.

This apparatus is for use in those cases of total extirpation of the larynx where all sinuses between the oral cavity and the external air are closed, and all direct communication between the lungs and upper air-passages cut off. It consists, essentially, of a small three-necked Wolff's bottle. Through a perforated cork in the middle neck passes a tube bearing the reed which hangs downwards in the centre of the bottle, the outer end of the tube being connected with a No. 14 (English) soft rubber catheter cut off obliquely at the end.

To one of the necks of the bottle is fitted a stiffish rubber tube four inches long and quarter-inch internal diameter, ending in a vulcanite nipple for plugging into the tracheal tube. The third neck of the bottle is left open.

The reed is one taken from a penny toy known as a "screecher." It is of the "beating" variety, and made of metal. Unlike the "free" reed of the harmonium, or mouth organ, it is of very strong tone, and cannot be over-blown. The long narrow tube of the catheter to which it is attached merely lowers the pitch without stopping the vibrations, as would be the case with the harmonium reed. The tongue of the "screecher" reed requires a little manipulation before a satisfactory effect can be obtained, but when obtained the result is permanent.

In using this apparatus the patient smears the catheter with vaseline, and passes it along the nose for six inches, where it is fixed in position by a vulcanite olive through which the catheter passes, and which is plugged into the orifice of the nostril.

The patient next inserts the nipple at the end of the short tube into the trachea opening on to the skin of the neck. He can then breathe easily and without noise so long as the third neck of the bottle is open.

When he wishes to speak this opening is closed by the forefinger of the hand holding the bottle, and on expiration the air is forced through the reed and enters the pharynx in a state of vibration just below the uvula, producing a bass note in fair imitation of the male voice.

The patient for whom the apparatus was made, can now articulate not very clearly in this case on account of one-sided paralysis of the tongue, but he can recite the only piece he knows, i. e., the Lord's Prayer, and make himself well understood.

By placing the reed in a bottle it is kept perfectly free from contact with secretions and condensed moisture, and the whole apparatus can be easily taken to pieces and kept clean.

In the instrument shown in the illustration, instead of a three-necked Wolf's bottle an ordinary wide-mouthed bottle is used, the three apertures being furnished by the use of a brass tee-piece, thus diminishing the bulk and increasing the strength of the apparatus.

EATON.

Six Cases of Excision of the Larynx.—F. G. HARVEY.—*Lancet*, September 21, 1901.

As the recorded cases of complete excision of the larynx are comparatively few, and the details of the method have not been fully described, the author thinks it may be of interest to publish these cases.

The operation may be performed by separating the trachea and cricoid cartilage from the esophagus, commencing from above and working downwards, or commencing from below and working upwards. He describes the latter method. He assumes the proper preparation of the patient for a long and serious operation, strict antiseptic precautions, and the proper warming and ventilation of the operating room, with as little exposure of the body as possible.

The first step, after administering chloroform to the patient, is to make a vertical incision extending from the hyoid bone to a point as low as the fourth or fifth ring of the trachea. A transverse cut should be made along the whole length of the under surface of the hyoid bone through skin and fascia, dividing the anterior juglar veins, which must be tied. The sterno-hyoid, the omohyoid, and the thyro-hyoid muscles are divided at their insertion into the hyoid close to the bone, and the flaps thus formed are reflected downwards and outwards to either side. The thyroid isthmus should then be divided between two ligatures, and the lobes of the thyroid separated from the trachea. When the trachea is completely bared it may be divided between two ligatures, and the lobes of the thyroid separated from the trachea. When the trachea is completely bared it may be divided from before backwards, and the lower portion separated from its attachments to the esophagus and stitched to the skin. A Hahn's cannula will now be introduced, all bleeding will be arrested, and the parts immediately around the lower portion of the severed trachea will be packed with gauze. It will be found necessary to remove the Hahn's cannula from time to time, and to clear the trachea of any blood which may have found its way into it. The patient at this point must not be deeply under the influence of the chloroform, as we shall then have warning of any blood trickling into the lungs by his coughing; if this occurs it will be well to sponge out the trachea by introducing for some distance a swab or sponge on a holder. The next step will be to dissect off the upper portion of the trachea from the esophagus and the muscles from the lateral surface of the cricoid. The inferior cornu of the thyroid is next

bared by detaching and reflecting the crico-thyroid and inferior constrictor muscles. The muscles and perichondrium in front of the thyroid will now be separated and reflected as far back as the superior cornu, which latter will next be freed by dividing the periosteum on its surface, and pushing it along with the lateral wall of the pharynx and the loose areolar tissue, backwards until the posterior lateral border of the cricoid is reached. The outer two-thirds of the lateral portion of the thyro-hyoid membrane, which is attached to the superior border of the thyroid cartilage, will then be divided transversely and cautiously at the point of junction of its upper and middle thirds; and when the adjacent mucous membrane is reached this must be picked up with forceps and divided, whereby the upper portion of the epiglottis can be seized and drawn forwards. The anterior wall of the pharynx is thus opened, and by pulling the epiglottis strongly forward, and with it the whole larynx, the knife can be placed on the posterior surface of the cricoid, and by cutting downwards the anterior wall of the esophagus will be opened. Care must be taken at this point to limit the cut to the parts which are covered in front by the posterior surface of the cricoid; if this is not done the lateral wall of the pharynx and the esophagus will be unnecessarily encroached upon, and too much of their anterior walls will be removed, thus rendering it difficult to approximate their ages. The whole larynx is thus completely detached, and the defect in the pharyngeal mucous membrane must now be made good by inserting sutures quite close to the cut edges and so preventing in-turning of the epithelial surfaces. The sewing up must be water-tight, with fine catgut sutures so as to form a Y-shaped stitched line, then a row of Lembert's sutures, must be added, transfixing the muscular and cellular coats of the esophagus and pharynx. The third layer unites the stumps of the pharyngeal constrictors, and the fourth layer brings together the divided sterno-hyoid and thyrohyoid muscles. Finally, the T-shaped skin incision will be united, leaving only a three-cornered cavity above, which may be packed with iodoform gauze; thus, only the above cavity and the tracheotomy will remain unclosed. The Hahn's canula may be removed in twenty-four hours. Nutriment will be administered by the rectum for from twenty-four to forty-eight hours, after which milk may be given by the mouth. Rotter suggests that the trachea should be divided from behind forwards, but the author considers it is far more easy, expeditious, and safe to divide it as he has described. Attention is drawn to the impor-

tance of keeping blood out of the lungs, the whole success turning on this point and the accurate suturing of the pharynx and esophagus. Of the six cases noted, three were treated by this method. Of the remaining three, one was treated by the older method with a preliminary tracheotomy and stitching the pharynx to the skin; the second can hardly be classed as an excision, inasmuch as the whole of the larynx, when the soft parts covering it were reflected, was capable of being lifted off.

Details are then given of six cases. The first (epithelioma) has remained well for six years. The second survived some weeks. The third case died unexpectedly a few days after operation (no autopsy). The fourth was only a partial removal, and the patient survived five months. The fifth case died from acute pneumonia twelve months after operation. This was removed, and his health at date of publication appeared quite satisfactory.

ST. CLAIR THOMSON.

Two Cases of Radical Cure of Ozena under Influence of an Inter-current Erysipelas of the Face.—M. MONTORO DE FRANCESCO.
—*Revue Heb. de Laryng., D'Otol., et de Rhinologie*, March 8, 1902.

The first case was that of a young girl who had suffered for seven years from a severe case of ozena which had resisted all treatment. There was atrophy of the inferior turbinals and partial destruction of the bones of the nose and of the cartilaginous septum. After an attack of erysipelas which had its point of origin at the nostrils, the odor and the crusts disappeared entirely. The mucous membrane after a time recovered its normal appearance. Three years later there had been no relapse so that the cure appeared complete.

The second case was a young lad suffering from erysipelas of the leg and who was nursed by a sister who had a characteristic ozena of the left nostril. Encouraged by the result of the former case, the author had almost decided to inoculate the young girl with the erysipelas of the brother, when she spontaneously contracted the disease, which developed in the lobule of the left ear. Dr. Montoro therefore simply took care that the nostrils were involved in the infectious lymphangitis and made some scarifications on the left cheek near the nasal ala. The erysipelatous process soon involved the whole cheek and nostril. When the patient recovered from the erysipelas, there remained no trace of the ozena.

W. SCHEPPEGRELL.

Diphtheria Treated with Antitoxin and Pilocarpin.—E. W. SAUNDERS, M. D., (St. Louis, Mo.)—*Courier of Medicine*, April, 1902.

The author declares that before the days of antitoxin his results were no better than his neighbor's. He admits his enthusiasm for his treatment—which is justifiable according to his statistics—and his conviction that by a more general employment of it diphtheria mortality can be still further reduced. He believes that the use of Pilocarpin can do no harm and will reduce the sequelae. During the past seven years there has been treated by him or his assistants upwards of 3,000 cases, not including consultations in which he could not dictate the policy from the first, without a death. There have been no special sequelae in these cases, no severe nephritis, and only a few of mild paralysis. The author's rules are, substantially:

I. In all cases exhibiting an exudate, or psuedo-exudate administer pilocarpin to its physiologic effect, salivation, daphoresis, etc.

II. If the least suspicion of diphtheria is justifiable, the membrane should be examined microscopically, and progress noted which, if unfavorable, demand an immediate injection.

III. Dose of antitoxin should be large enough to neutralize all toxins present, and a sufficient strength to similarly act upon all that may enter the circulation in the following doses: Mild case, 1,500 units; moderate severity, 2,000 units; severe, 2,000 to 3,000 units.

IV. Special attention to quality of antitoxin is imperative. Serum deteriorates in ordinary temperature and six weeks is the maximum time, after withdrawal from the animal, that it should be used.

V. Even when temperature becomes normal, with coating membrane, pilocarpin should be continued for one or two days in diminishing doses—it stimulates leucocytes and shortens convalescence.

VI. If the case comes to notice after the fifth day pilocarpin must be used with caution on account of possible heart failure.

In conclusion, the author declares the fear that many entertain for pilocarpin groundless; he has "used it in thousands of cases of children and has yet to see one instance where life seemed endangered with it."

F. C. E.

Removal of a Tooth-plate from the Œsophagus by aid of the X-rays.—NATHAN RAW, M.D. (Liverpool)—*Liverpool Medical Chirurg. Jour.*, Sept., 1901.

The patient was a well developed man, who, in an attempt to commit suicide, swallowed his plate of false teeth. By means of a bougie the foreign body could be felt some 12 inches from the lips. Fluid nourishment could not be swallowed, showing that the obstruction was complete.

By means of the X-rays the plate could be seen below the level of the upper end of the sternum and hence removal by means of any external operation would be most difficult as well as dangerous.

With the aid of a powerful X-ray tube and a current of 40 volts and 12 aupires, with the screen in front of the patient, it was possible to guide the forceps to the plate, seize one of its projections, and forcibly remove it from the oesophagus. Considerable bleeding immediately followed and later on some inflammation on both sides of the neck with expectoration of a purulent discharge. The latter symptoms soon subsided.

The author argues that the position of the tooth plate made forcible removal the only means of extraction, although it is generally agreed that no force should be used in removing foreign bodies from the oesophagus.

TILLEY.

The Application of Physical Science to the Surgery of Diseases of the Nose and Throat.—JOHN MACINTYRE (Glasgow).—*Jour. of Laryngol.*, Dec., 1901.

Promising results have been obtained by the author by the application of the "static machine" in certain forms of lupus, tubercle, epithelioma and rodent ulcer. The statements of this well known observer are very modest in tone, but they seem to imply that from his clinical experience, he anticipates a permanent place for the electric force in the treatment of the above conditions. A number of cases are cited in which improvement followed this line of therapy. How this physical force acts we do not know, but it is supposed that the rational forces at work in the tissues to cast out disease are stimulated to greater activity.

M. D. LEDERMAN.

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No. 6.

ORIGINAL COMMUNICATIONS.

(Original communications are received with the understanding
that they are contributed exclusively to THE LARYNGOSCOPE.)

RELATIONS OF THE FACIAL NERVE TO THE TYMPANUM ESPECIALLY IN TYMPANIC EXENTERATION.

BY B. ALEX. RANDALL, M. A., M. D.

Clinical Professor of Ear Diseases, University of Pennsylvania.

I trust it is not necessary, gentlemen, to remark that by tympanum, I do not mean the drumhead or the cavity just within it

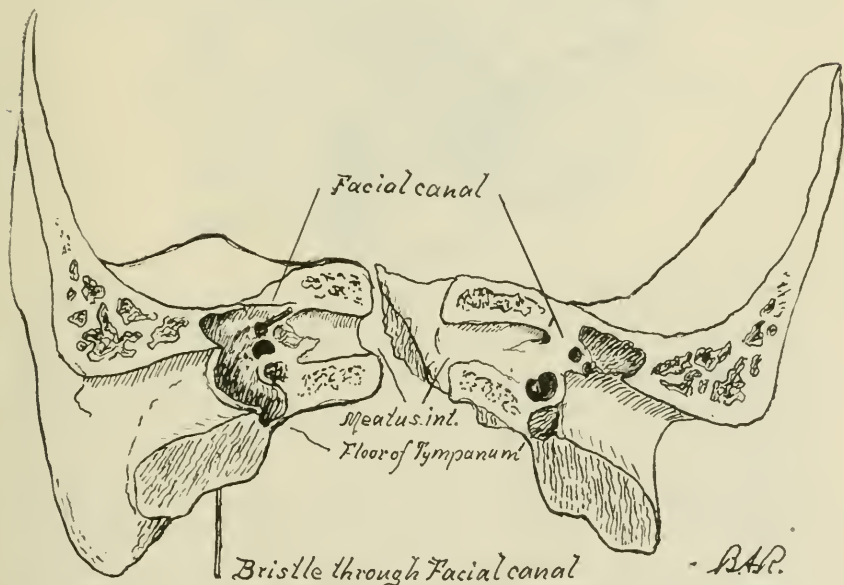


Fig. 1. Temporal bone sectioned vertically through the tympanum, internal and external canals showing relations of Facial canal to oval window and Tensor tympani.

alone, but the whole tympanic cavity or series of cavities, which intervenes between the Eustachian tube and the cells of the mastoid.

Therefore, the course of the Facial nerve will be considered in relation to all portions of the cavity, as well as in regard to its proximity to the middle of the posterior margin of the drumhead or any other vulnerable point. A consideration of this matter would seem called for by reason of several publications upon the subject and from the earnest queries with regard to it which are often addressed to me by students; and the too frequent injury of the Facial nerve in our tympanic and mastoid operations is evidence of the need of a clearer idea with regard to its location.

In reality, the topography of the facial canal is not very difficult to grasp in clinical cases. It is rarely hard to locate the oval win-

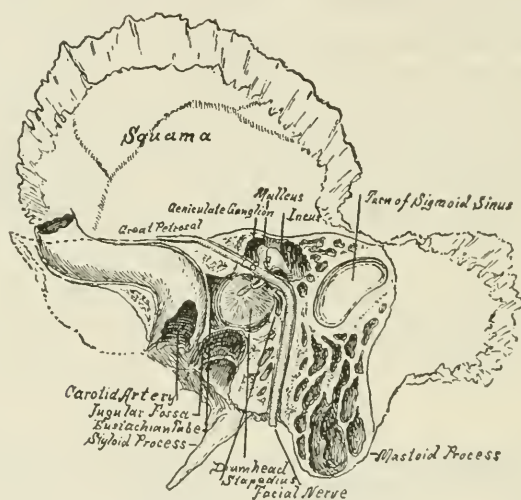


Fig. 2. Sagittally sectioned recent temporal viewed from within.

dow; and we know that the upper margin of this niche is formed by the prominent facial canal. We can follow it but a few millimeters forward before reaching the geniculate ganglion and the disappearance of the Facial nerve, out of all ordinary reach, into the depth of the petrous bone, and external to this part of its course and somewhat protecting it is the tensor tympani muscle and its bony semi-tube. (Fig. 1.) Backward from the oval window it descends in curving course to pass about three millimeters behind the middle of the posterior margin of the annulus (Fig. 2) and then passes vertically down to its stylo-mastoid exit. It is more difficult to gain a clear idea of its location when we approach it through the mastoid, with its variable size and its wholly artificial surgical opening; but here, too, a positive anatomical guide is ready to show the

position and course of the facial canal. This is the polished boss of bony prominence on the inner wall of the antrum which marks the protuberance of the horizontal semi-circular canal and the downward curving convexity of the Facial. This is recognizable in the majority of the clinical cases when the field has been well laid bare, and cleansed of blood and detritus. Remembering that from this point the descent of the Facial nerve is exactly vertical, it ought to be fairly possible to define this course throughout its whole extent.

Developing like the other bony structures of this region only as a sheath to more important soft tissues which are apparently moulded

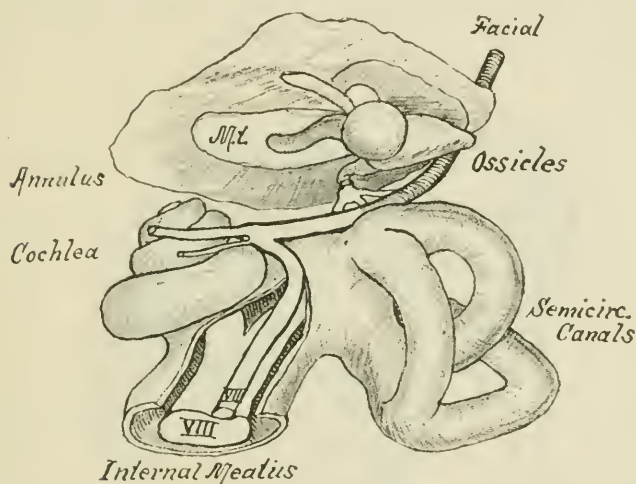


Fig. 3. Drumhead, annulus, labyrinth and Facial nerve, isolated and viewed from above.

by them, the facial canal is also a secondary growth and can be seen in the embryo as a cartilaginous scroll, at first sheathing incompletely the well-formed nerve. (Fig. 3.) Yet this condition of incomplete protection persists in many of the lower animals and is far from rare in man, especially in early life; so that a dehiscence of the facial canal just above the oval window is very frequent. Hence the occurrence of Facial palsy in many cases of tympanic inflammation even although this has been so fleeting as to have left no trace by the time that the patient comes under observation or at most reveals an injection so slight as to leave its etiological relation in doubt. Still a considerable experience makes one confident that "Bell's palsy," so-called, is less often due to rheumatic inflammation of the nerve at its stylo-mastoid exit, than to its involvement in its tympanic portion just above the oval window. (Fig. 4.)

Cases of the other sort are met from time to time, sometimes when there is much to suggest the intra-tympanic lesion; but the large majority of those which I have met gave, in the history, if not in the present appearance, full evidence that this intra-tympanic part was the really injured portion of the nerve.

In the operation of tympanic exenteration, whether done as an entity or as a part of the more radical tympano-mastoid exenteration, this course of the Facial nerve must always be of great importance; and some have made their operation apparently dependent upon the question of how its safeguarding was most surely to be

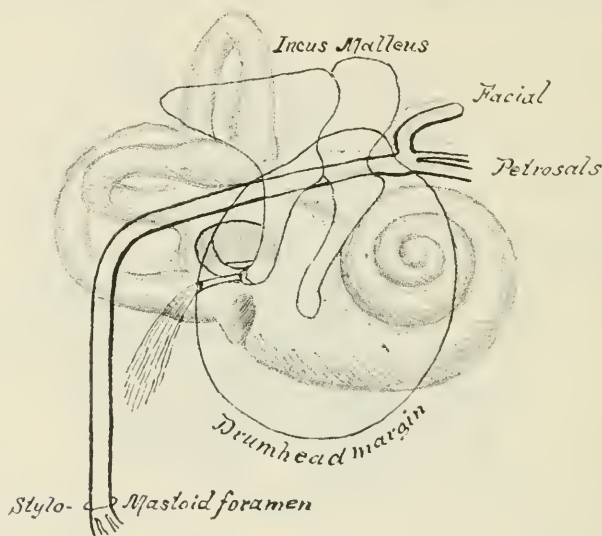


Fig. 4. Facial nerve from without in its relations to the overlying and the deeper structures.

secured. The employment of an instrumental guard and even the forming of a needless opening through the mastoid in order to accommodate this, is evidence of the point which I make, for it is unquestionable that injury to the Facial nerve is easily caused by the slightest bungling. The method of operating should, therefore, be such as to furnish a perfect guard to the endangered structures, but if possible to find this in the natural structures rather than by the employment of an instrument which may perpetrate the very injury which it is designed to prevent. If the operation is done from a point near the annulus, as I have urged (*Trans. of the Amer. Otolog. Society, 1898*), it is perfectly feasible to open the aditus from the canal with little loss of time and with great

security to the Facial nerve, because the margin of the Rivin-ian segment remains between it and the chisel, as a bridge against which we can safely chisel until it has become too delicate to afford further protection, when it is easily broken away by outward traction with a spoon. Then the opening into the antrum and attic needs but such additional enlargement as the condition of caries demands.

In those cases where the mastoid as well as the tympanum must be eviscerated, it is usually more convenient to open up the mastoid first and to remove the back wall of the meatus intervening between the canal and the mastoid cavities, antrum and attic by the rongeur or chisel working from without inward. But virtually the same means can be adopted for the protection of the facial nerve

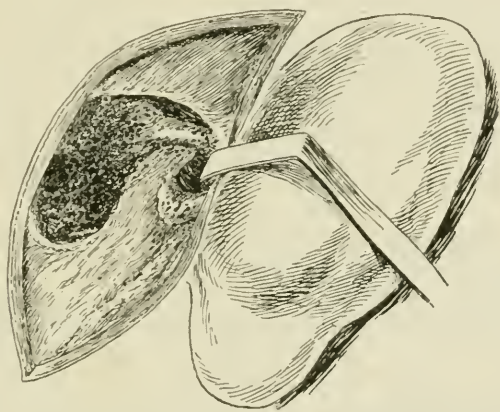


Fig. 5. Mastoid and canal bared, and tympanum and mastoid exenterated. The boss marking the semicircular and facial canals shows at the bottom of the wound.

and the same bony margin, preserved as a guard until the last steps of the procedure, will bridge the gap directly over the Facial nerve. Leading apparently outward from this, the ridge constituted by the anterior wall of the mastoid can be cut down as far as the middle of the annulus and thence outward in a steep slope which can approximate the vertical course of the descending portion of the facial. Here, too, it ought to be feasible to avoid all injury, although if the spoon is used, it can easily be engaged more deeply than is meant, so that light, quick curetting is safer than more vigorous work. My impression as to the practicability of these measures to avoid injury of the Facial nerve may be over-weening, for a nearly invariable success in a hundred or more cases was broken by the occurrence of three instances of Facial palsy in quick succes-

sion last year. But only one of these could be fairly ascribed to the fault of the operation, and that rather to its execution than to its plan.

The illustrations which I have presented,* reveal the relation of the Facial nerve in the recent and in the macerated specimen, with a fullness that seems to require little descriptive elaboration, and make clear, I trust, the really simple and almost unmistakable position of the nerve and the rational means of avoiding it. In cases of extensive caries, whether tubercular or of other character, it may be needful to curette away the walls of the facial canal, barring the nerve to a possible injury. Yet, when unavoidable, this is probably wise if carefully done, since it can frequently be innocuous; while the timid avoidance of such intervention may easily leave the parts for a spontaneous lesion of the nerve, and I believe we can fairly claim that its surgical injury is far less likely to be lasting than that which spontaneously occurs. Bezold has shown that exfoliation of the entire facial canal, which must have ruptured the nerve, may be followed by prompt and perfect restoration. Whether it may be possible in these or other cases where disease has destroyed the continuity of the Facial to resect the damaged nerve and adjust its ends for union, is as yet a matter of speculation, although I believe that Cozzolini claims to have already done it.

Otitic Sinus Phlebitis and Thrombosis.—J. E. SHEPPARD, M. D.
(Brooklyn)—*Brooklyn Med. Jour.*, Nov., 1901.

In an exhaustive and practical paper upon this important topic the author has presented the clinical aspect of these complications. Involvement of the sinus rarely follows a chronic purulent disease of the middle ear. Among the septic organisms which are found in the purulent products, the streptococcus seems to be the most virulent.

The various stages of the disease are carefully considered, and the classical symptoms are taken up individually.

Of all the symptoms the most characteristic are the pyemic fever, the chills and rapidly fluctuating temperature. These symptoms are subject to variations.

The differential diagnosis is also considered at some length. There is but one proper method of treatment in this condition: Remove the cause of the trouble. Expose and open the sinus for some distance; remove the thrombus and try to obtain a free flow of blood from both ends of the vessel. When the diagnosis is reasonably certain the author recommends as a general rule that the internal jugular be tied off well down in the neck and high up toward the bulb (if necessary also the facial vein), and the intermediate portion of the vein resected.

M. D. LEDERMAN.

*Thirty photographs, macroscopic and microscopic were thrown upon the screen.

DEFORMITIES OF THE BONES OF THE FACE AND NOSE.

BY EUGENE S. TALBOT, M.D., D.D.S., CHICAGO.

Fellow of the Chicago Academy of Medicine.

(Continued from page 343.)

In 1874 I commenced investigations in a systematic way to ascertain the character and determine classification of deformities. This was followed by a study of the degenerate classes of this country and Europe and finally of peoples in the ordinary walks of life. The result of this research has been published from time to time in medical and dental journals.

It is here my intention to analyze this work in a systematic way, showing how deformities of the face, nose and jaws are produced.

To the great anatomist, Camper, belongs the credit of first studying the human face from the scientific standpoint. His name was, therefore, given to the facial angle which still serves as a standard by which to judge the rank of the human face in comparison with the lower animals. In one of his works he gives (Fig. 14) "physi-



Fig. 14.

cal observation on the difference of the feature of the face considered in profile, as the heads of apes, orang-outangs, of negroes and other peoples, tracing up to antique heads. You will be astonished," he says, "to find among my first plates two heads of apes, then of negro and then of a camel."

The angle of Camper may be employed to ascertain the relation of the face to the head. (Fig. 15.) This illustration represents what Camper calls an antique head.

This imaginary line dropped from the superciliary ridge down the side of the nose will determine the existence of prognathism or orthognathism, in other words whether it is a case of arrested development or excessive development.

During a trip to Europe in 1897, observations were made on the British Isles and the Continent as to the facial angle. In most

countries casual examination was made, but where marked deformities presented themselves more careful observations were conducted. The soldiers, police and cabmen, as a rule, as well as citizens were observed. In Stockholm, on examination of 5,000 people, 2 per cent were found outside the perpendicular, 14.70 per cent on the line, and 83.30 per cent inside the line. In London examination of 10,000 faces revealed 4.13 per cent outside the line, 12.87 per cent on the line, and 83 per cent inside of the line. In an examination of 3,000 English school children (about ten years of age), 93 per cent possessed jaws inside of the perpendicular line. Prognathism elsewhere in Europe furnishes a sufficient offset to marked irregularities of the teeth.

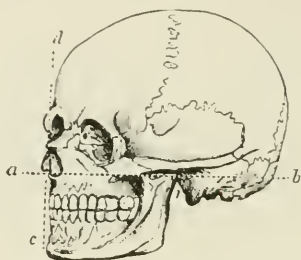


Fig. 15.

In comparison with these results are those obtained in Baltimore under the supervision of B. Holly Smith, by William C. Palmer; in Chicago by Robert Keith under my own supervision. Those made in Baltimore showed 8 per cent outside the line, 36.5 per cent on the line and 55.5 per cent inside the line. Those in Chicago were 4.6 per cent outside the line, 14.6 per cent on the line, and 80.7 per cent inside the line.

The rapidity of evolution of the facial angle is shown in the faces of the American negroes. On examination of 357 by William Ernest Walker in New Orleans, protrusion was found in 97.5 per cent; on the line, 2.5 per cent. On examination by Arthur R. Dray of 686 in Philadelphia, 83.57 per cent were found to present protrusion; 15.95 per cent on the line; 1.13 per cent recession. On examination of 1,085 in Chicago, 51.06 per cent presented protrusion, 31.08 per cent on the line, and 16.6 per cent recession. Examination by Eugene F. O'Neill of negroes in Boston showed that of 1,000 454 or 45.4 per cent were protrusion, 395 or 39.5 per cent on the line, and 151 or 15.1 per cent receding. O'Neill says: "Many of the faces classed as protruding have a marked protrusion of both jaws, but have the symphysis well back of the

vertical plane. In fully one-half of the cases enumerated as protruding, the protrusion is comparatively slight and a smaller number has the typically protruding angle which is shown in the diagram."

The lateral arrest of development has been fully as great as the antero-posterior in the evolution of the face and jaws. To determine the nature of this evolution, I made numerous measurements anent these changes. The measurement of early as well as modern peoples were made on skulls obtained from museums and crypts of churches in Europe in which last large collections of skulls are found.

Measurements were made across the upper jaw from the outer surface of one first molar to the outer surface of the corresponding molar of the other side. (Fig. 16.) These points were taken be-

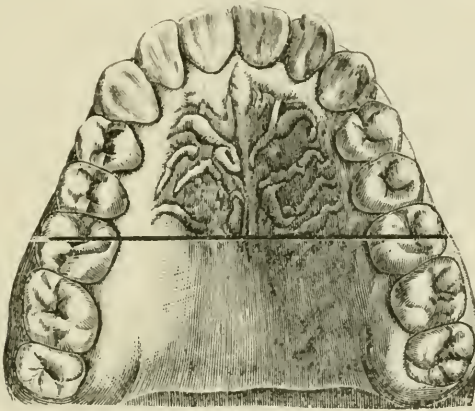


Fig. 16.

cause these molars are first of the permanent set of develop, hence because developing posterior to the temporary ones, they erupt independently and are not interfered with by any in the jaw. The point of the jaw where these teeth are situated is the widest normally developed not influenced by local causes. This furthermore was most accessible. Measurements were made in person over twenty-five years of age, because at or near this period growth is complete. After this period development is very slow. At thirty to thirty-five years it ceases altogether.

Mr. J. R. Mummery¹ and Messrs. Cartwright and Coleman examined ancient British and Roman skulls in Hythe Church, Kent,

¹ Odontological Society of Great Britain.

England, and found that they measured from 2.25 inches to 2.75 inches, with an average of 2.50 inches, while the jaws of present English measure from 1.88 inches to 2.63 inches, with an average of 2.28 inches. In jaws of the early Romans measured from 2.12 to 2.62 inches, while the jaws of the present Italians measure only 1.97 to 2.62 inches; average, 2.17 inches.

In America they vary in different localities from 1.75 to 1.97 inches, lowest, and from 2.20 to 2.63 inches, highest; average from 2 to 2.19 inches. It will be seen that while there is occasionally a jaw in England, Italy and America which will measure the extreme width, the greatest change is in the lower figure and averages. This is to be expected, since in neurotics and degenerates, there is a tendency to atavism which is continually exerting its influence against arrest, which often produces jaws of the most extreme size. These figures include only the normally developed jaws. If we were to include those with arrest of development of the face and jaws, the lowest would become about 1 inch and the highest about 2 inches, with an average of .75 inches.

These examinations having been made by different persons, physicians and dentists, however, the usual allowance must be made for the personal element of error.

A tissue or organ undergoing a change in structure is a transitory structure. Transitory structures are more easily affected than those normally developed.

This struggle for existence was very early pointed out by Aristotle in his law of economy of growth.

The law of economy of growth whereby an organ or structure is lost for the benefit of the organism as a whole is beautifully illustrated in the degeneracy of the human face. The development of the brain at the expense of the face necessitates studies of the evolution of the face from the point where Camper left them.

The dividing line in the evolution of the face must be drawn where normal development ceases and pathologic begins. At this point deformities of the nose and jaws with irregularities of the teeth become quite marked.

Having in a general way outlined the evolution going on in the human face, the causes which produce arrest and excessive development of the face, nose and jaws require attention. These turn upon the struggle of the organs for assimilable nutriment.

The questions involved in heredity and embryonic development as concerned in maldevelopment are by no means so simple as the

average practitioner or even obstetrician assumes. At the outset, every vertebrate embryo assumes the same type before definitely differentiating into its final type. Arrests of development hence produce conditions found in lower types. Some arrests may be for the benefit of the body as a whole, while others are an arrest of the type. There is a struggle for the assimilable nutriment between the different structures of the embryo. Type heredity aided by immediate atavism tends to preserve the type against gains or losses from immediate heredity since the embryonic potentialities of a type are never fully realized in the adult. Type heredity and immediate atavism sacrifice the individual for the race. Reproductive powers represent the race and to these, higher extra-uterine specialization of the individual is sacrificed. Losses through immediate heredity, if not completely overcome, aid remote atavism at the expense of type heredity and immediate atavism. This is why embryonic types result from defective heredity. The cyclops with its primitive face and nose is an arrest of development in the embryonic time when the pineal body was equal in possibilities as an eye with the bilateral eyes. On embryonic development, maternal environment exercises an enormous influence in the direction of arrested or progressive development. Maternal shock produces arrests of development which are not photographic conditions, but survivals of embryonic states. While maternal impressions do have an effect, it is simply in conditions of arrest and not in photographic reproductions of the alleged cause of the impression. Thereby, therefore, are created periods of stress around which, as Kiernan remarks, the disappearing and developing tendency necessarily centers, when certain functions and structures are to be lost by the disappearing, and others gained by the developing organs. Two most important periods of stress are the senile or simian period (Fig. 17) four and one-half months of foetal life and the period of sex differentiation. Nearly all conditions of physiologic disturbance may result at these from the influence of maternal nutrition or environment or of hereditary factors.

Among the factors which form part of maternal and paternal environment as well as the environment of childhood are climate, soil and food. These factors intermingle to a greater degree than is at first apparent. Monotony of food produces the constitutional disturbance of metabolism known as scurvy. Into this often enter conditions of depression like those resultant on confinement on shipboard or in institutions and during the Arctic winter. While

monotony of diet alone in infancy then suffices to produce scurvy (as shown in the scurvy resultant on constant use of a single infant food), still in the adult other factors are needed. In the decrease of scurvy, in modern maritime life is seen as much of the effects of rapid voyages as of improved food.

The influence of these complex factors are singularly well shown in the complex sociologic state civilization. This, while not having the malign influence usually ascribed to it, has, by its economy as regards food production and preparation, lessened markedly the



Fig. 17.

functions of the jaws and teeth. Food no longer needs the grinding and tearing required from primitive man or even types as high as the "pile dwellers," whose food is still to be found even to coarse breads and cakes. Under the law of economy of growth, lessened muscular action leads to lessened blood supply. Lessened blood supply produces conditions in the offspring tending to under nutrition of certain parts for the benefit of the body as a whole and to diminution in size of unused parts. As the jaws, alveolar process and teeth are comparatively unstable in all mammals, these of necessity are peculiarly affected by disuse.

Similar evolution is occurring in the dog in whom domestication plays the part of civilization and who from a carnivore has become an omnivore.¹ In the mongrel dog, race admixture and other factors producing change in man are to be found. In him particularly does domestication play the part of civilization and jaw and tooth irregularities ascribed to other causes occur. Facility for securing food under domestication has played a part. Disuse of the jaw as a weapon by man has done its share in the changes comparatively early in development. To a certain extent this last change is still going on in the dog. In cases predisposed to advance in evolution, irregularities of beneficial type occur with great facility. In cases predisposed in the opposite direction changes result of opposite tendencies. The factors thus exerted play a part in evolution of the nose and throat.

Modern researches, not entirely supporting the doctrine that race is the mother of climate, tends to show that vital resistance in tropical and arctic climes turns more on external conditions than on race. Forty years ago the United States engineering authorities claimed that it was impossible for human beings to live the whole year in Minnesota, owing to extreme cold in winter. Now not only is the soil cultivated throughout the entire state, but still further north in Manitoba a large city has sprung up surrounded by a very considerable farming population.

The influence of food in producing systemic changes involving interference with proper osseous development, may be divided into two factors. One concerns the quality of food, and the other the quantity and variety.

The possibility, therefore, as Weismann¹ remarks is not to be rejected that influences continued for a long time (that is for generations such as temperature, climate, nourishment, etc.), which may affect the germ plasm as well as any other part of the organism, may produce a change in the constitution of the germ plasm. The influence of these factors may be exerted on the child during its intra-uterine life as well as during the extra-uterine periods of stress through its effect on maternal nutrition.

The factors entering into the struggle for existence most markedly involve the relations of the brain to the head and face. During intra-uterine life the face loses and the brain gains. This is well illustrated in the contrasted skulls (Fig. 18.) After birth the face gains at the expense of the brain. The body and face, as a

¹ Talbot, *Irregularities of the Teeth*, Fourth Edition.

whole, so gain on the growth of the brain that as Havelock Ellis² remarks, further growth from the third year onward though an absolutely necessary adaptation to environment, is, to some extent, growth in degeneration and senility. The amount lost of the promise of the child is well shown in the following (Fig. 19), where the perfectly developed being fulfilling the promise of the child is contrasted with the man that the child actually becomes. Struggles for existence on the part of the different organs and systems of the body are most ardent during the periods of intra- and extra-uterine evolution and involution. At the period of sex differentiation and at the simian or senile period (Fig. 17) irregular balance given the



Fig. 18.

struggle for existence leads to imperfect sex differentiation or premature senility. This last often produces irregular and incomplete ossification. Since, as Harriet Alexander³ has shown, degeneracy is a process of evolution leading to alteration of form, because of cessation of inhibition in certain directions resultant on diminished work, it logically follows that since diminished function precedes change of structure, increased function checks the change of structure in its biochemic stage. Nay, more structural elaboration due to gains from degeneracy may be retained while the degenerate structure resume their higher functions. Hence a degenerate race may rank higher in evolution because of the beneficial variations due to degeneracy. Neither degeneracy nor pathology necessarily imply malignity. The question whether degen-

¹Germ Plasm.

²Man and Woman.

³Medicine, 1896.

eracy or pathologic factors be malign turns on how the structures affected stand toward the complete development of the individual. The structures of the face, as Minot,¹ has shown in man are degenerate as viewed from the vertebrate type. They are structures which quite early in evolution have been sacrificed to the gains of the central nervous system. (Fig. 19.) On them, therefore, do

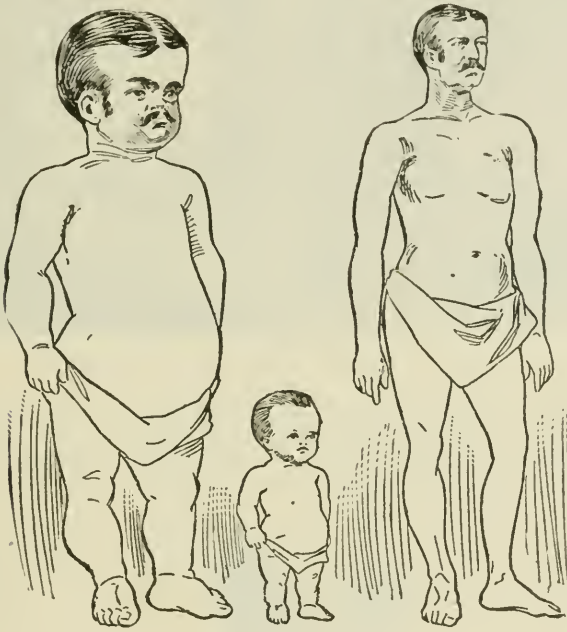


Fig. 19

struggles for existence between organs leave most decided marks. The jaws and face are less marked in type with rise of evolution.

Two facial types result from arrest of development. Fig. 20 shows the arrest antero-posteriorly; Fig. 21, lateral arrest. All other forms are modifications of these two. They may become more intensely or less marked. The nose may become arrested at a much earlier date. (Fig. 22.) The lower jaw in Fig. 20 while apparently excessively developed is normal. The seeming excess is due to the face being arrested. Were it normal, the lower jaw would not appear so prominent. Because of mobility the lower jaw is more likely to be normal, in neurotics and degenerates, than the upper. The lower jaw (Fig. 21) is arrested in development.

¹ Embryology.

Arrest of the face almost always involves the upper. Arrests and excessive development of the nasal bones necessarily result. The



Fig. 20.



Fig. 21.

anterior nasal cavity is arrested when arrest of the face takes place.

The width of the external nasal cavity varies considerably. In 2,000 cases the greatest width was 1.25 inches; the smallest



Fig. 22.

width was .75 inches. The length from the nasal spine to the edge of the nasal bones was (greatest length) 1.54 inches, and the

smallest 1.20 inches. These results were found in skulls of Peruvians, stone-grave Indians, mound-builders, cliff-dwellers, Hawaiians, etc. In neurotics and degenerates, when arrest of development of the face and nose has taken place, the width measured .50 to .60 of an inch and the length .80 to .90 of an inch. In these cases, if the turbinated bone develops uniformly, the vomer will be straight. If asymmetry exist, the vomer will be deflected to one side or the other; in which case the bone, when covered with mucous membrane, will fill the cavity of the nose and mouth-breathing will result.

On general view of the nose, want of harmony in its general outline is often seen. The nasal bones are arrested in development, the tip of the nose is turned up, from a normal or excessively developed cartilage. Another very marked deformity is that in which nasal bone and cartilage are excessively developed. The bone takes one single and the cartilage another, producing a double nose. This condition is very common among Hebrews. Americans may also have nasal organs with material enough for two fair-sized noses. In a majority of such cases, total collapse of the walls of the nose and frequently mouth-breathing results.

In over 2,000 measurements of the nasal bones, the shortest was found to be .40, the longest 1.65 of an inch in length. Even the bones without the cartilage would make a fair-sized nose. These bones take different angles. Those which are the largest take the greatest angle. A form of deformity more common than generally supposed, is that in which the nose is deflected to the right or left. This deformity, however, is often so great that it produces a marked asymmetry of the face and as often as slight as to be unnoticed by the average observer. It is carried to the right or left by want of harmony in development in the cartilaginous structures when only the soft tissues are involved. When the nose bones are deformed, quite another condition results. Marked deflection as well as other deformities of the nose are not observed in early life. As the face develops the deformity becomes more prominent and at puberty is well defined, although it does not reach its full extent until twenty-five or thirty years. In most instances, the two lateral halves of the face are asymmetric, as well as the nasal bones. The bones of the nose develop upon one side and deflect the lower border to the opposite side, where the bones are undeveloped. This has a tendency to deflect the cartilaginous septum in the same direction,

which, in turn exaggerates the deformity. Noses in neurotics and degenerates may be deflected nearly forty-five degrees from a normal position. These marked deflections have been charged to injury in utero or at birth. As the bones of the nose are undeveloped at birth and as marked deflection is not observed until later in life, such a theory fails to fit the case.

At birth the nasal cavities are not evenly developed. If one side be larger than the other, more air will pass through one side than the other. If the two sides are nearly even, the amount of air will be about uniformly distributed. This, however, is not always the case. The floor of one nasal cavity may be considerably lower than the other. When this is the case one-half of the face, including ear, eye and jaw is usually lower than the other.

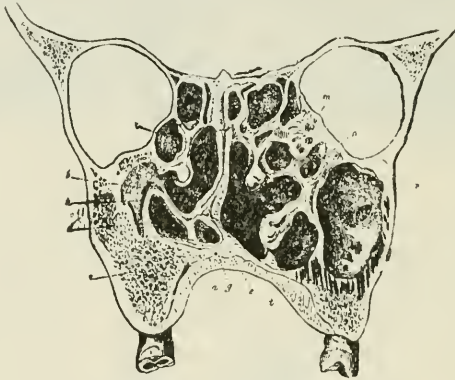


Fig. 23. (Zuckerkaudl).

When arrest of the face occurs, there is always arrest of the upper jaw as well as the bones of the nose. When the arrest is concentrated upon a part or organ the results are a marked deformity of the part. Thus (Fig. 23) marked arrest of the face may produce a medley of small cavities instead of normal nasal cavities, antra and ethmoidal cells. The septa may develop to one side. The nasal cavity may be divided into smaller cavities and the opening into the antrum be very much enlarged. The ethmoidal cells may be considerably enlarged at the expense of the nasal cavities. Deflection of the septum must therefore be considered due to a normal development on account of arrest of the bones of the face. The other mechanical in its relations to the turbinated bones.

Deflection of the septum depends upon the walls of the nose and the turbinates. The walls of the nose and the turbinates ossify before the septum, hence the septum must adapt itself to the location of these bones.

The position of the vomer depends upon the walls of the nasal cavities, the shape and size of the turbinated bones. These may be excessively developed or arrested in their development. One or both inferior turbinates may be entirely arrested. Thus the following skulls (of the Army Medical Museum at Washington) possess such deformities.

Skull No. 1,090, case 177; lower right turbinated bone undeveloped.

Skull No. 1,092, left inferior turbinated bone undeveloped, vomer gone.

Skull No. 1,094, both inferior turbinated bones undeveloped.

Skull No. 2,431, no inferior turbinated bone.

Skull No. 2,453, no inferior turbinated bone.

Skull No. 2,798, no inferior turbinated bone.

Skull No. 2,451, no left inferior turbinated bone.

Skull No. 1,216, case 180; both inferior turbinated bones undeveloped.

Many Peruvian skulls show undeveloped inferior turbinated bones. Thus:

Skull No. 630, case 166; no right inferior.

Skull No. 631, case 166; no right or left inferior.

Skull No. 115, case 167; no left inferior turbinated bone.

The vomer calcifying later in life, stimulated by air inhaled and exhaled, develops the cartilage and moulds it into a center equi-

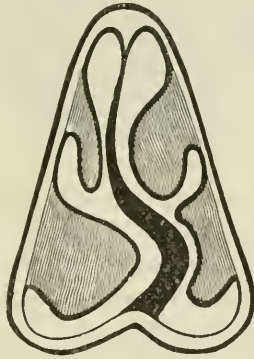


Fig. 24. (Casselberry.)

distant between the turbinates (Fig. 24). These structures serve to warm the air taken into the lungs. This is accomplished by the air passing uniformly between them through the nose. Should defects in development arise, excessive or arrested development of bony structure occur easily in such unstable vascular structure.

Excessive development of the turbinated bones is very common. Thus, (No. 2,131, case 175, Vancouver Island Indians), the right middle turbinated bone is excessively developed, so that it fills the anterior middle of the nasal cavity with a large cavity in the cen-

ter. The left middle and right and left inferior bones were well developed, filling both nasal cavities. In this case the vomer, which stands uniformly between the turbinated bones takes the shape of the letter S. No. 2,129, Vancouver Island Indians, shows left superior turbinated bones excessively developed to a level with middle turbinated bone. The vomer is deflected to the right, then to the left in order that it may stand in a central position. Skull 1,309, case 173, illustrates the principles here laid down excellently. The right middle turbinated bone is undeveloped, the inferior right is excessively developed; the vomer in its middle takes a V-shape so as to stand in the middle between the turbinated bone.

That inhalation and exhalation govern the development and shape of the bones of the nose is shown in many ways. When the nasal cavities are small and the bones become enlarged upon one side, the outer wall becomes concave, encroaching upon the antrum. Again, when the nasal cavities are small, the turbinated bones develop and curl upon themselves, so that uniform space is obtained for passage of air. In a long, narrow nasal passage, bones will develop long and narrow; the superior turbinated bone develops down sometimes below the lower edge of the middle turbinated bone. In other cases the nasal cavities may be short and broad. Here the bones become large and short. They develop straight out from the outer wall and then turn upon themselves back to the point of origin. Sometimes they are very thin and dense, like the vomer. Again they are thick and cancellated, like the spongy alveolar process. Occasionally one nasal cavity will be lower than the other. When the nasal cavities are not uniform in development—that is, narrower in front than behind—the turbinated bones will develop posteriorly and either be undeveloped anteriorly or will curve more, so that air may be evenly distributed throughout the cavity. When the turbinated bone develops larger or smaller behind than in front, the bone will bend itself to conform to this deformity.

Skull No. 736, case 179, has a very marked deformity of the vomer which is bent in both directions. The anterior half is midway between the turbinated bones, while the posterior half is bent to the right, the greatest point being between the right upper and lower turbinated bones. Both concavities have projections one to the right, the other to the left. The anterior curvature of the vomer is the largest and for this reason the left turbinated bone is undeveloped. This, however, does not permit of sufficient air to allow

even distribution through the nostril upon one side. The procedure room the air had forced the vault of the mouth on that side downwards resulting in a markedly noticeable deformity. The dental arch is well developed.

The turbinated bones are sometimes so situated that the air deflects the vomer to one side or the other so that deformity at right angles occurs just below the inferior turbinated bone. This, however, cannot be located very near its place of attachment, since the vomer commences to enlarge or thicken as it reaches the nasal spine, thus preventing the bend.

The drawings of Zuckerkandl here given illustrate the points made.

Fig. 25 shows the bone very unevenly developed. This is partly due to an excessively developed antrum upon the left side and a

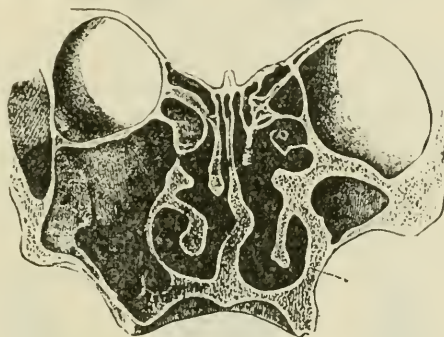


Fig. 25. (Zuckerkandl).

correspondingly small one upon the right side. The turbinated bones and vomer are so distributed that there is a uniformity of space throughout the cavity. The vomer has even deflected to the right in order to produce this harmony. The bone is, however, not broken, but simply bent and that this bend is almost opposite the enlarged left inferior turbinated bone. Although the face is very asymmetric, the bones intended for the purpose of warming the air are excellently arranged. The right cavity is considerably lower than the left, the inferior turbinated has lengthened to correspond. Aspiration has separated the lateral halves of the vomer and the space filled in with bone.

Fig. 26 presents quite another phase. Here the facial bone is uniformly developed; the antra are comparatively uniform; the turbinated bones, however, are very unevenly developed. The bend and break in the vomer are about at a point between the two turb-

inated bones and exactly opposite the excessively developed right inferior turbinated bone. The bend is no greater in the one than

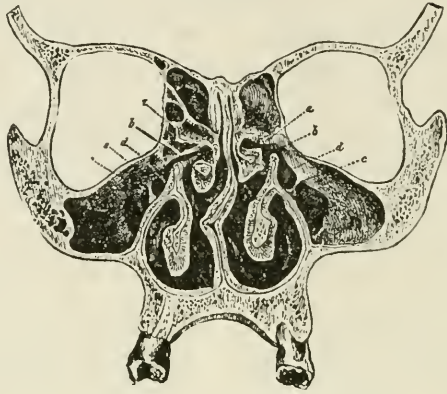


Fig. 26. (Zuckerkandl.)

in Fig. 25, and yet in Fig. 26 the left plate is fractured, while the right one is slightly bent. This is usually the case. The fracture is not complete, but is a semi-fracture.

Fig. 27 excellently illustrates arrested development of the bones

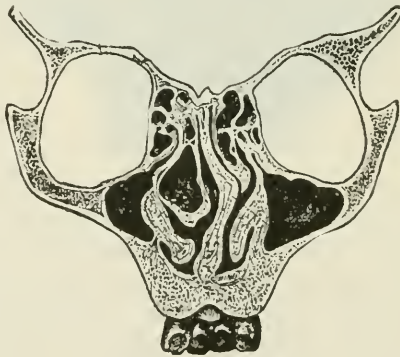


Fig. 27. (Zuckerkandl.)

of the face, nose and jaws. The bones are very unevenly developed with excessive development of the left superior turbinated bone, which has a cavity in it for the purpose of securing more surface for the blood supply. An individual with such a development must necessarily possess weak lungs, small chest and low vitality. In order that the air may be uniformly warmed the septum has deflected toward the right. The vomer has deflected toward the right in order that the turbinated bone may have room and also to furnish uniform space. The septum in this case is bent and not broken.

Fig. 28 illustrates another deformity occasionally observed. In this case the nasal cavities extend laterally nearly outside of the

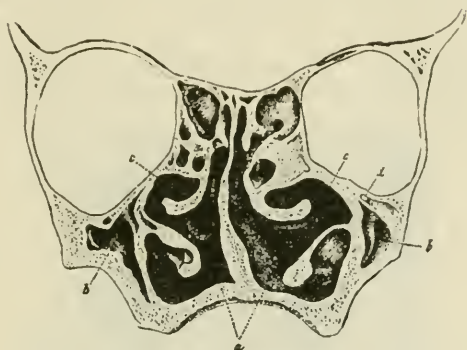


Fig. 28. (Zuckerlandl.)

alveolar process. An attempt to open the antrum through the cavities of the teeth would result in drilling into the floor of the nose. Having such a large space the turbinated bones have adjusted themselves to the best advantage. The septum also has adapted itself as best it can by deflecting toward the left side, having bent itself at its weakest part and opposite the enlarged turbinated bone. There is, however, a large space upon the right side between the two turbinated bones. The thickness of the bone pre-

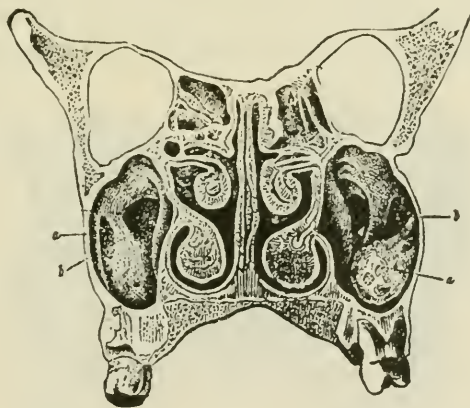


Fig. 29. (Zuckerlandl.)

vents its being bent by the pressure of air and excessive development of the vomer has taken place upon that side as a substitute. The turbinates have developed as nearly equi-distant as possible.

Fig. 29 shows the turbinated bones upon both sides excessively

and uniformly developed; as a result the vomer is straight upon the left side, while the right half has been torn away and by aspiration has been drawn slightly into the space between the two bones.

Fig. 30 and Fig. 31 are drawings taken from frozen specimens in the Army Medical Museum at Washington showing that



Fig. 30.

the parts of fracture and deflection are situated between the turbinated bones.

A skull of a fourteen-year-old girl who died of consumption had hardly a bone, including the lower jaw, that does not show stigmata of degeneracy. The left inferior turbinated bone did not develop. A simple ridge is present where the ridge should be attached to the outer wall. The right inferior turbinated bone is excessively developed. The vomer has curved to the side where

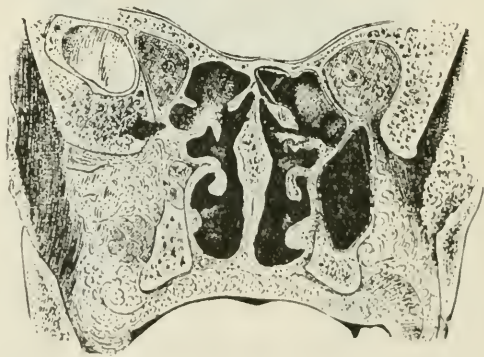


Fig. 31.

there is quite a bend, still, because the girl died at fourteen, this is not as marked as it would have been had she lived.

In another case a bone projects .36 of an inch (situated upon the

right side of the vomer just midway between the superior and inferior turbinated bones) .75 of an inch in length, 1.50 inches in from the nasal spine, and .50 of an inch from the posterior border, which is comparatively straight. The anterior part is slightly curved but perfectly straight .50 of an inch interior to the commencement of the deformity. There is a slight groove upon the opposite side of the vomer to correspond to the line of projection. It stands just midway between the two turbinated bones. This is not a fracture, nor can it be claimed that the projection is for the purpose of repairing a fracture. The length of this projection would alone preclude such an idea. These projections vary from a mere ridge up to a projection .36 of an inch in width.

These projections were first described by Langenbeck, who gave to them the name of exostoses. They were afterwards described by Theile, Harrison Allen and John Mackenzie. "These projections," according to Bosworth, "are always found along the sutural lines of the septum and consists in a more or less well-developed angular prominence or ridge, which projecting into the nasal passage, acts to obstruct normal respiration."

This has not been my experience. I have always found them situated upon the convex surface and the greatest projection being at the weakest point of the septum. As the greatest deformity may be located at any point between the anterior and posterior edges of the bone, the greatest point of projection may occur on any part of the septum, situated about midway between the turbinated bones.

Breaks, whether of cartilage or bone and spurs, are produced in the same manner. This also accounts for division of the septum as well as for a break upon one side with a bend upon the other. The spur seems to be a supernumerary turbinated bone. Deflection and the supernumerary turbinated bone compensate for the space on either side of the nose. Just as the intelligence of the individual depends upon the number of nerve cells, they upon the amount of gray matter in the brain and the gray matter depends upon the number of lobes or convolutions, so the warmth of air taken into the lungs depends upon the amount of blood, the blood upon the amount of mucous membrane and this upon the contortion of the bones of the nose to produce surface. If they are arrested upon one side, those upon the other enlarge or elongate and thus make up for the deformity. When the inferior turbinated bone is entirely arrested the bend in the septum and projection

seems to compensate for the loss. In neurotics and degenerates, the lungs and the chest walls are often undeveloped and very delicate.

Mouth-breathing, then, is due to arrest of the nasal cavities and bones, excessive development of the turbinates and mucous membrane. This, together with adenoids, are the result of an unstable nervous system. That the patient may breathe through the mouth the lower jaw drops slightly (Fig. 6.) This causes the alveolar process to elongate, carrying the teeth with it, hence the high vault.

To show how different forms of contracted dental arches are produced would consume too much time. Being the result of local causes, they do not interest us at the present time. Those wishing to study the details will find them demonstrated in my work upon "Irregularities of the Teeth." All that is necessary to state is, given an arrested jaw, the teeth arrange themselves as best they can. The character of the deformities depending upon the order of development of the teeth.

Some Observations on Intubations of the Larynx. — W. F. LOWER—*Cleveland Medical Gazette*, Dec. 1901.

The author considers the subject under three periods. 1st, before the introduction of antitoxin; 2nd, since the use of antitoxin; 3rd, intubation at the very beginning of laryngeal obstruction.

The mortality rate in the second period when antitoxin is given at the very beginning of the disease is only 1 per cent; and for all cases 5 or 6 per cent. The deaths at this time are due to septic pneumonia from wearing the tube too long, and from delayed introduction of tube.

The ideal period of introduction is the third. Sudden death occurring during the introduction of tube is due to a reflex inhibition of the heart through the irritation of the terminals of the superior laryngeal nerve and not from suffocation by the pushing down of membrane. To avoid this possible contingency atropine is recommended.

It is seldom necessary to make more than one attempt at introduction. The tube need not, as a rule, remain in over 48 hours and oftentimes less. His experience is based on 198 intubations.

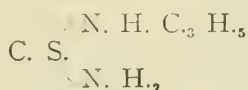
STEIN.

THIOSINAMIN IN EAR DISEASES.

BY JOSEPH C. BECK, M.D., CHICAGO, ILL.

Thiosinamin was known to Berzelius in 1828, but it was first introduced into the therapy by Hans v. Hebra in 1892, and since then its toxic, bactericidal, physiological and therapeutic actions were investigated by different authors.

It is a derivative of the aetherial mustard oil, prepared by a mixture of Allyl—mustard oil, alcohol and ammonia. The formula is



It may also be prepared from the aetherial oil of horseradish treated in the same manner, according to the United States Dispensatory. It appears in colorless prisms which melt at a temperature of 74°C. , has a bitter taste and a garlicky odor; is sparingly soluble in cold water, but in two parts of warm water and one part of alcohol is easily soluble.

Doelken and Lange have studied the toxic action of thiosinamin on animals. In frogs they observed besides a narcotic action anasarca which lasted for days. In dogs vomiting occurred and the respiration was slower; also a drowsiness was plainly noticed. Von Hebra, however, could not notice any such effect upon dogs in which he injected much larger doses than are customarily used in a human.

Von Hebra and Gaertner have established the fact by experiment that Thiosinamin has a distinct lymphagogue action upon the system, and this was corroborated by Spiegler, who proved that other chemically allied substances had the same action upon the system.

Van Hoorn and Foster probed into the bactericidal action of the drug but found it to be so but slightly. It would retard the growth of bacteria but not destroy them.

The effect upon the corpuscular elements of the blood had been reported by Richter, that shortly after injection of the usual dose, 0.03 to 0.15 grams, a marked decrease in the number of leucocytes (from 14,000 to 4,000). resulted. This leucolysis lasts about four hours and then the count returns to the normal or in-

creases in amount. In the majority of the cases there is a slight increase of hemoglobin.

Summing up the results of these investigations, we observe that,

1. The introduction of the drug in the usual doses is not harmful. (Von Hebra).

2. That we cannot expect any bactericidal action from the drug. (Van Hoorn).

3. That the drug produces slight tonic effect, due to the slight increase of haemoglobin. (Richter.)

4. That the lymph elements and their changes on administration of this drug will be of great therapeutic value.

Hebra was able to demonstrate that the injection of thiosinamin into any part of the body produced a local reaction in such locations in the body where there existed some poorly nourished pathological tissue, especially cicatrices or old inflammatory structures. This local reaction is best observed in cases of lupus, where two hours after the injection at any distance from the disease, a redness and swelling of the diseased tissue appears. It may even result in the bursting of the epidermal layer and transudation of serum take place. This reaction lasts from four to six hours, and even after twenty-four hours signs of the same remain visible. After repeated injections the redness remains for several days. This reaction has been observed by many dermatologists.

The method of administration of the drug are manifold, according to different authors.

Von Hebra administers 15 per cent alcohol solution by subcutaneous injection of 10 to 20 drops twice a week; then increases this dose at the end of the third week to a half a drachm.

Silferskiold injects subcutaneously a 5 per cent aqueous solution with the addition of half a per cent of carbolic acid.

Newton uses a 10 per cent alcoholic solution as high as a drachm per dose, once or twice per week.

Bekess uses a 5 per cent alcoholic solution in doses of 5 to 20 drops once or twice a week in children.

Van Hoorn, Rouff and Tousey StClair use the 10 per cent solution in equal parts of glycerine and water injected into the triceps or gluteal muscles.

Suker, Mertens and myself employed it per mouth and subcutaneously, administering in capsules as follows: The pure drug, 1 grain three times per day for two weeks; 2 grains three times a day for two weeks; 3 grains three times a day indefinitely.

Urea employed it in salves and soap of 15 and 25 per cent.

I have of late experimented with two cases, using 10 per cent thiosinamin in equal parts of glycerine and water injected into the Eustachian tube three to five drops, and then by Politzer's method, forced it into the middle ear.

The length of time that thiosinamin should be continued depends on the reaction. Some cases react quickly and are improved very rapidly, while others it takes very long. Bekess reports a case treated for two years and then obtained good results.

The various diseases in which thiosinamin was used are as follows:

Lupus, scleraderma, psoriasis, enlarged lymph glands, scars causing contracture, keloids, hard scars after healed syphilitic ulcers, strictures of the esophagus and urethra, muscle and tendon contractures, fixed uteri following perimetritis, chronic articular rheumatism, leukomo cornea, ectropium, choroiditis dissimulata exudativa, cataract, strictures of the Eustachian tube with secondary middle ear diseases.

In nearly all these conditions favorable results were reported, and especially in cases where the action of the thiosinamin was aided by mechanical treatment, such as dilatation of strictures with sounds during the period of softening of the scars by the action of thiosinamin.

At one time it was thought that thiosinamin would be a panacea in the treatment of tuberculosis, but since its action is better understood, it was abandoned and pronounced dangerous, because it tends to unravel old encapsulated tubercular foci and allow the disease to assume new and virulent action. The use of thiosinamin is contraindicated in all conditions where by its action it may loosen old fibrous structures which nature has built up around old diseased tissues as a protective, or where old scars were rather a support than an impediment. Examples:—Encapsulated tubercular focus may be loosened and start a new fresh infection. An abdominal scar after laparotomy may be so softened as to produce a hernia. Recurrence of phlyctenular keratitis, loosening of a healed-in sequester, etc.

In otology where we have to deal with many conditions of scar formation, the use of thiosinamin has certainly not received a sufficient trial, if I may judge correctly from the scant literature on this subject. My first experience with the drug dates back two years. I then selected five cases of otitis media catarrhalis chroni-

ca, in which there was impairment of hearing, constant tinnitus aurium, negative Rinne. These cases were treated with injections of thiosinamin and no other treatment for a period of three months to one year. After repeated examinations I found that there was no perceptible change in their conditions, except in three of the cases the tinnitus aurium became bearable and changed in character somewhat.

Having read the work of others, where the use of thiosinamin in combination with mechanical treatment, as in strictures of the esophagus, etc., I at once selected nine other cases, also of tubal obstruction, with the characteristic difficulty or impossibility of passing the bougie, difficulty of inflation, marked retraction of the drum-head and not very moveable, as demonstrated by Siegel's otoscope; a negative Rinne and considerable deafness, tinnitus aurium and marked changes in the naso-pharynx.

A 15 per cent alcoholic solution of thiosinamin was prepared and injections were made between the scapulae, or into the arm subcutaneously, starting with ten drops once a week, in some cases twice a week. This dose was gradually increased until an ordinary hypodermic syringe-ful was used each time. These injections were combined with electrolysis of the Eustachian tube, according to the method advised by Duel (*Amer. Jour. of Med. Science*, April, 1900), by passing an insulated Eustachian catheter which carries a 20-karat gold bougie into the opening of the Eustachian tube. This is connected with a negative pole of the galvanic battery, while the positive pole the patient holds in his hand. Then one milleampere is turned on, the bougie is passed as far as the middle ear if possible. Allow to remain for four to five minutes, gradually increasing to five milleamperes. Besides this, the patient receives twice a week local treatment to the nose and throat, Politzer inflation or catheterization or a massage by means of the pump. Patient's general condition, such as anemia, etc., was treated with the suitable remedies, and where obstructive conditions were present in the nose, requiring operative interference, it was done.

This treatment was carried on from two to eight months, depending on the rapidity of the improvement. In the latter stages of the above treatment, dilatation of the Eustachian tube by means of elastic bougie was substituted for the electrolytic bougie and it was distinctly noticed that the same passed with much greater

case whereas at the beginning it was in some cases impossible, in others difficult to introduce it.

Case I. Albert C., aged 19, complains of difficulty in nasal breathing and constant desire to clear his throat. Has nose bleed at times, difficulty in hearing and constant noises in his ears.

Diagnosis:—Septal ulcer, chronic naso-pharyngitis, otitis media, catarrhalis chronica, retraction of the drum, thickened and slightly moveable. Passing of the bougie almost impossible.

	R.	L.
Vox sib.....	6 m.	5 m.
	Negative Rinne.	

The treatment, thiosinamin, electrolysis, simple bougie, tympanic inflation, aural massage and local treatment to the nose and throat. Hearing increased to 20 feet. Tinnitus improved. Under treatment for five months, and is at present time under treatment.

Case II. Mr. Harry D., 40 years old. Complains of difficulty of hearing and constant ringing in the right ear. Cannot breathe well through his nose.

Diagnosis:—Hypertrophic rhinitis, deviated septum to the right, ecchondrosis septi on the left side, tubal obstruction on the right side; marked retraction of the membrana tympani.

	R.	L.
Vox sib.....	5 m.	12 m.
	—Rinne.	+Rinne.

Treatment:—Removal of the ridge from the septum; local treatment to the nose and throat; thiosinamin, electrolysis and tympanic inflation; aural massage. Improved after four treatments and noises almost entirely disappeared.

Case III. Charles H., 17 years old. Complains of difficulty of hearing, difficulty in breathing and marked noises in both ears.

Diagnosis:—Adenoid in the region of the ostium tubae; hypertrophic rhinitis and pharyngitis; retracted membrane; difficulty to place the catheter in the Eustachian opening. Impossible to pass a bougie.

	R.	L.
Vox sib.....	$\frac{1}{2}$ m.	1 m.
	Negative Rinne.	

Treatment:—Removal of the adenoid; local treatment of the nose and throat; thiosinamin; electrolysis; general hygienic and dietetic

conditions improved. Still under treatment. Marked improvement in hearing. Hears a whisper on the right 3 m.; on the left side, 5 m., and the tinnitus aurium is lessened considerably.

Case IV. Miss B., 26 years old. Complains of great noises and dryness of her nose and throat.

Diagnosis:—Chronic atrophic rhinitis and pharyngitis sicca. Tubal obstruction with marked retraction of the drum-head; sclerotic in appearance.

	R.	L.
Vox sib.....	10 ft.	4 ft.
	Negative	Rinne.

Treatment:—Massage of the nasal mucous membrane; tonics and iodide of potash; thiosinamin, electrolysis and aural massage; tympannic inflation. Patient complained very much of pain at the site of injection of thiosinamin, which persisted for several hours. Improvement followed the treatment after three months. Patient did not return for further treatment.

Case V. Miss K., 27 years. Complains of great noises and dizziness. Cannot hear.

	R.	L.
Vox.....	1 ft.	1 ft.
Air conduction.....		0
Bone conduction.....		10 sec.

Impossible to pass a bougie; very difficult inflation. Membrana tympani markedly retracted and does not move by the use of Siegel's otoscope.

Used thiosinamin and electrolysis and pylocarpin. Was able to pass the bougie easier after the use of thiosinamin and patient declared that the noise was less though still present. The hearing did not improve, as the test would show that there were labyrinthian involvements in both ears.

Case VI. Mr. T., 45 years. Complains of ringing in his ears and difficulty in hearing. Cannot breathe well through his nose.

Diagnosis:—Hypertrophic rhinitis with mulberry end on the posterior end of the inferior turbinated body on the right side. Otitis media catarrhalis chronica with very narrow Eustachian tube. Marked retracted membrane and very atrophic and thin.

	R.	L.
Vox sib.....	7 ft.	9 ft.
	Rinne	Negative.

Treatment:—Removed posterior end of the inferior turbinated by snare. Internal administration of thiosinamin 2 grains twice a day in capsules. Local treatment of the nose and throat. Patient noticed a general improvement in his health. Hearing improved and noises markedly lessened after seven weeks' treatment.

Case VII. Mr. G., 26 years. Complains of loss of hearing and extreme noises in his ears, particularly in a noisy place. Marked headaches; luetic history. Patient always improves after simple inflation, but only for about a half hour.

Diagnosis:—Hypertrophic rhinitis, otitis media catarrhalis chronica, psoriasis and anemia.

	R.	L.
Vox sib.....	8 ft.	6 ft.
	Negative	Rinne.

Treatment:—General treatment with iron, quinine and strichnia; thiosinamin subcutaneous into the arm, causing at the site of a psoriasis patch an ecchymotic spot, which lasted for about three weeks. Massage per auditory meatus, electrolysis, simple bougie and Politzerization. Iodide of potash was used constantly, 15 drops three times a day. Patient reports improvement. Still under treatment. Psoriasis improved.

My observation in treating these fourteen cases is as follows:

First, that the injection of thiosinamin without mechanical treatment did not improve the condition, except to relieve the tinnitus some.

Second, that with the aid of electrolysis and injection of thiosinamin the simple bougie could be passed with much greater ease and inflation was much easier after a short time than I experienced in cases without thiosinamin or electrolysis.

Third, that all the cases treated with thiosinamin and electrolysis improved in the time from two to eight months in all respects—hearing, tinnitus aurium, general condition, etc.

Fourth, that before using the thiosinamin careful inquiry should be made for possible contraindication for its use, such as co-existing chronic tuberculosis, malignant tumors, scars which support the abdominal organs in the abdominal wall, such as are found after laparotomy and hernia.

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THE RHINOLOGIST, AN IMPORTANT FACTOR IN THE PREVENTION OF TUBERCULOSIS.

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But a few years ago, the rhinologist was looked upon by the general practitioner as a man without a mission. It was thought that he had come upon the scene uncalled for and unneeded; but, after a few years of earnest, honest work, we find that he has made a worthy place for himself among the medical fraternity, and that his field of usefulness is ever being more and more appreciated.

The medical field is large and few are the men who can grasp it in its entirety. Even the general practitioner is usually recognized as being best in some special branch, and this, the one that he usually likes best and studies most. The man who concentrates his energies on some one line is apt to be of most use to the world, for he may become master of his subject and add new knowledge. People have had noses since creation's dawn, yet it was left for the nineteenth century rhinologist to point out their value, and it is more than likely that throughout the centuries to come, new knowledge of this important organ will, from time to time, be added which will be of vast importance to its possessor.

The importance of the rhinologist in the field of otology is set forth by an eminent aurist in the statement, that if rhinologists would do their duty and attend to the nose and naso-pharynx of the children of this generation, there would be little use for aurists in the next generation. Great as is his mission as a preventor of deafness, it is of less importance than the part he should play in the prevention of tuberculosis. To this I wish to call your attention.

Nature adapts the organs of the body to the uses which they are to subserve, and, in case one organ is injured she usually has some substitute to offer. For many emergencies she has provided by duplicating some of the more important organs, so that, in case one becomes incapacitated the other can perform its function. Again she has made one organ capable of doing the work of others in addition to that of its own. For example, very important blood vessels can be destroyed and yet the part supplied will not perish,

for a collateral circulation will be established. The most important function of the nose is the part it plays in respiration; yet, if nasal stenosis is present, the mouth is used to conduct the air to the lungs. While it serves the purpose of a substitute very well, yet it can not take the place of the nose for it lacks many of the essentials of that organ. Therefore, mouth-breathing should never be allowed when nasal respiration is possible.

The nose is nicely adapted to the part it plays in the work of respiration. The lungs should, if possible, receive none but pure air and air of a tolerably constant degree of temperature and moisture; but, wherever man dwells, he is subjected to dust and variations in the thermometric measurements. The nose placed at the beginning of the respiratory tract, has as its important function the preparation of the air for its entrance into the lungs.

The first function of the nose is that of a strainer. The vibrissae stand at the vestibule and seive out from the air, in its passage, a great portion of the dust and bacteria. Should particles pass these sentinels, they meet the moisture of the nasal cavity, are precipitated, and removed; partly by sneezing, partly by blowing the nose, and partly by the cilia waving them toward the throat whence they are expectorated.

The next important change which is brought about in the inspired air through the agency of the nose is the change of temperature. For this purpose the mucous membrane of the nose is well supplied with blood vessels, which, under the control of the vaso dilators and constrictors, send more or less blood to the part as necessity demands. It is wonderful to contemplate that air from the frozen north or the hot tropical desert can be tempered by the same mucous membrane in the short space of time necessary to pass from the tip of the nose to the pharynx.

The third change which is wrought in the inspired air is the moistening of it. The nasal mucous membrane provides a thin watery secretion which bathes the mucous surfaces and moistens the air.

Under certain conditions nasal respiration is interfered with. We have a stenosis, either partial or complete, either unilateral or bilateral; and, as a result, we have certain changes in the economy which are well known. Those suffering from these conditions are mouth-breathers. They have a characteristic dull, heavy look, the outlines of the face are changed, and in many instances the chest is deformed; but, what is of most importance to the individual is the

general lowering of vitality and the chronic catarrhal condition which such breathing induces.

The causes of nasal stenosis may be either a spur, a deflected septum, a hypertrophied turbinal, or an enlargement of the pharyngeal and faucial tonsils. In correcting mouth-breathing the physiology of nasal respiration must be kept in mind. We see patients who are mouth-breathers and yet upon examination we find the nose patulous or we find the lower meatus free. Remembering the course of the air currents in the nose, we well understand this. The air does not pass along the inferior meatus, but takes an upward course and passes backward along the superior meatus striking the oro-pharynx at its uppermost portions. Hence, we see a hypertrophied middle turbinal is of far more importance pathologically than a similar condition of the inferior turbinal, and the spurs and septal deviations which run up toward the roof of the nose are the ones to correct for nasal stenosis. We can also understand how a little mass of adenoid tissue filling the upper portion of the naso-pharynx will cause serious mouth-breathing.

Aside from the induction of mouth-breathing the enlargement of the lymphoid tissue forming the tonsillar ring affords a pathological condition which offers an easy entrance to the tubercle bacillus. It has been shown that the germs of several infectious diseases gain entrance to the body through the tonsils, notably acute rheumatism, scarlet fever, chorea and tuberculosis.¹

The tubercle bacilli are often found in the tonsils when there is no tuberculosis present in other parts of the body. Dieulafoy² inoculated sixty guinea pigs with tonsillar tissue; eight, 13 per cent, of them succumbed to tuberculosis. He also inoculated thirty-five guinea pigs with adenoid tissue. Of these seven, 20 per cent, succumbed to tuberculosis. In none of these cases was tuberculosis present in the subject from which the tissue was taken.

While these experiments of Dieulafoy have been disputed by some investigators, they have been confirmed by others, notably by Lermoyez, who repeated his experiments a second time in order to be sure that they were free from error; and Brindle and Gottstein.

Whether or not the tubercle bacilli are found in tonsillar and adenoid tissue, at all times, in sufficient numbers to infect guinea pigs is not the question. Experiments do show that they are found in individuals who are apparently free from tuberculosis. This fact leads to the inference that the tonsils and adenoids may

be ports of entry when the germs pass on into the lymph stream.

The old accepted theory which supposed that, since the lungs are the usual seat of tuberculosis, the germs must be breathed directly into them with the inspired air is no longer tenable as a means of accounting for infection. If nasal respiration be normal, germs to so enter, must run the gauntlet of the vibrissae and nasal mucous, besides the attempts to throw out foreign material by sneezing and blowing the nose as well as the ever-active cilia of the epithelium. If the individual be a mouth-breather, the germs will encounter the moisture of the oral cavity which tends to precipitate them from the dry air upon the mucous membrane there to gain entrance to the tissues or to be cast off with the expectoration; but, whether he breathes through the nose or mouth, the residual air in the lung will be a force sufficient to render the possibility of directly infecting the finer air passages and air cells almost nil.

In place of the direct inhalation theory we are forced to the conclusion that the common channel of infection is through the lymphatics. The experiments of Baumgarten³ in which he produced a typical tuberculosis by injecting small quantities of bacilli into the urethra and bladder, also under the skin and into the eye, show the lymphatics to be able to carry the infection to the apex of the lung, no matter where the primary seat of infection.

Latham⁴ believes the infection of bronchial glands to be often due to absorption from the alimentary canal and the extension from them to the apex to come through lymph channels.

With such evidence before us, the roll of the rhinologist assumes increased importance. We know that tubercle bacilli are breathed in daily. I am not a high contagionist and I believe that under normal conditions the human economy will throw off the bacilli before they find lodgment; but I see great danger when nasal respiration is interfered with, for then the economy has lost the protection which nature has provided against such invaders, and the only chance of ejecting the bacilli is through expectoration.

Again, a catarrhal condition which would naturally exist where nasal respiration is interfered with or rendered impossible, offers greater opportunity for the germs to gain entrance. Osler⁵ attaches great importance to this, and says: "A special predisposing factor in the lymphatic tuberculosis is catarrhal inflammation of the mucous membranes, which in itself excites slight adenitis in the neighboring glands." While it is not necessary to have a catarrhal condition, since the bacillus is able to pass either by inter

or antra cellular channels through the healthy surface epithelium, as has been shown by Orth, Klebs, Baumbarten and others, nevertheless, that such a condition greatly facilitates its passage can not be denied.

Wright⁶ attaches so much importance to the infection taking place through the upper air passages that he says: "We must assume at present that the tubercle bacillus passes into the lymphatics through the mucous membrane of the naso- and oro-pharynx in a very large proportion of cases of pulmonary infection."

The rhinologist then stands at the door. It is his duty to teach the great importance of correcting abnormal respiration. While catarrh does not run into consumption, as is generally understood, nevertheless it is a predisposing factor of great importance. Mucous membranes which are affected with chronic catarrh possess a lessened resistance and are often the seat of small abrasions, which offer an easy entrance to the tubercle bacillus.

Aside from his duty in keeping the upper air-passages healthy so that infection may take place less readily, the rhinologist has a special mission in early diagnosis. It is to him that patients suffering from tuberculosis in the early stages are apt to come for relief from a slight persistent cough, especially after talking or laughing. Coughs which do not yield to appropriate treatment in a reasonable time should be branded as suspicious. The temperature of these patients should be taken. A two hourly chart required of them for a few days may give most important information.

It is of the greatest importance to the patient afflicted with tuberculosis that he find it out at the earliest date possible; so, where there is suspicion, all methods should be exhausted to find out the truth; and, fortunately, we have at our command means which make an early diagnosis possible in the majority of cases. With a thoroughly trained ear, the tuberculin test, the Roentgen rays and the microscope, there is no reason why cases should pass on to the stage of consolidation before they are detected; and, with the first two, most cases can be detected in the prebacillary stage.

The chances of recovery for the tubercular patient decrease as time passes. In the early stage of the disease, from 60 to 95 per cent of the cases are being cured. Turban of Davos, says of those in the very early stage that 97 per cent should be cured. How hopeful this disease, then, if only an early diagnosis is made!

Therefore, as rhinologists, we must assume a two-fold duty in the fight against tuberculosis. It is ours to prevent infection and ours to recognize the disease in its incipency when it is curable.

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THE NOSE AND THROAT IN THE HISTORY OF MEDICINE.

BY JONATHAN WRIGHT, M.D., BROOKLYN, N. Y.

(Continued from page 360.)

THE PROBLEMS OF THE PRESENT.

To pursue our history further we must enter the present era, and deal with matters to which it is at present impossible to give the proper historical perspective. Nevertheless some account, which must necessarily be very incomplete when compared to special monographs, must be given of questions still under active debate, especially in their earlier development.

LARYNGEAL PARALYSIS AND THE INNERVATION OF THE LARYNX.

The First
Report.

While the literature of the innervation of the larynx goes back to Galen, and of this we have given some account, the history of laryngeal paralysis can hardly be pursued with profit in the prae-laryngoscopic era. According to Semon* Traube was the first to give an account† of the laryngoscopic image in a case of laryngeal paralysis. The condition was due to pressure of a thoracic aneurism on the recurrensts, but the diagnosis of the lesion in the chest was not made at such an early date as this by means of the laryngoscope, which in later years has become so valuable an adjuvant to other methods of physical diagnosis in the differentiation of the condition.

Türk declared‡ that in 1859 he had already reported a case, but the interpretation of his reference leaves the matter in some doubt, though in the next year he described§ immobility of the

*"The Study of Laryngeal Paralysis since the Introduction of the Laryngoscope."

For a fuller account of the subject see this exhaustive bibliography. See also the review of the subject by myself; Two Cases of Laryngeal Paralysis; N. Y. Med. Jour., Sept. 28, 1889. The literature of the subject may be also studied in a monograph by Burger, "The Laryngeal Troubles of Tabes Dorsalis, 1891."

†"Laryngoskopischer Befund in einem Fall von Aneurysma des Aortenbogens Deutsche Klinik," No. 27, P. 263, 1861."

‡Klinik der Krankheiten des Kehlkopfes, etc., 1866, P. 143.

§Allg. Wien. Med. Ztg. No. 9, 1860.

left vocal cord in a case of right hemiplegia. Lewin in the same year gave a good description* of paresis of the muscle of the right arytenoid cartilage, "which narrows the glottis, and does not produce hoarseness," in a patient suffering from constitutional syphilis, evidently a case of posticus paralysis. Mandl gave an early but rather confused account of the subject in France,† and reported a number of poorly differentiated cases, including, however, some of functional disturbances.

We find him using the term laryngeal epilepsy, but not in the sense subsequently employed by Charcot. Türck,‡ we may note, interpreted a case of what was apparently hysterical aphonia as spasm of the crico-thyroid muscles. Gerhardt was the first to begin the intelligent differentiation of laryngeal paralysis according to their lesions.§ Baümle|| and Johnson¶ showed that a unilateral affection of the vagus may, under certain circumstances, produce a bilateral paralysis of the vocal cords, or paralysis on one side and spasm, as he believed, on the other. In America, in 1869, F. I. Knight reported** three cases of laryngeal paralysis. At first cases of functional paralysis, chiefly hysterical, were confounded with those of an essential lesion, as we have noted in the reports of Mandl and Türck, and there is consequently much confusion in the earlier papers on the subject, as for instance those of McKenzie†† and Cohen.‡‡ In 1870 Gerhardt contributed another valuable paper§§ to the literature of the subject, in which he introduced the term "cadaveric" position of the vocal cord, to indicate its situation in total laryngeal paralysis, a term to which of late there has justly been made objection as being inaccurate. This paper much advanced the clinical knowledge of the subject. In the same year appeared another important paper||| by Riegel, who pointed out the distinction between respiratory and phonatory paralysis.

Differentiation.

"Cadaveric Position."

*"Ref. Schmidt's Jahrb." No. 108, P. 99, 1860.

†"Des Neuroses Chroniques du Larynx," *Gaz. des Hopitaux*, No. 4, 1861.

‡"Allg. Wien. Medizin Ztg.," No. 8, 1862—70.

§"Virchow's Archiv.," 1863, Bd., XXVII., P. 68, 296.

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††Hoarseness, Loss of Voice and Stridulous Breathing in relation to nerve and muscle, affections of the Larynx, 1868.

‡‡Diseases of the Throat and Nasal Passages, 2d Edit., 1879.

§§Ueber Diagnose und Behandlung der Stimmbandlähmung, Volkmann's Sammlung Klin. Vorträge No. 36 (Inn. Medizin, No. 13), 1870.

|||Ueber Respiratorische Paralyse, Volkmann's Vorträge, No. 95 (Inn. Medizin, No. 33), 1870.

Schech* and Schmidt† did much to formulate the arrangement of laryngeal innervation and muscular movements given by the text books, and accepted up to the date of the Rosenbach-Semon 'law' and the Krause controversy, as to the nature of the cases of median position of the cord. W. W. Keen‡ in 1875 performed some experiments by faradization of the recurrent laryngeal nerves in a recently hanged man. Notwithstanding the attention which had been given to the matter, our knowledge of the subject was still in a very unsatisfactory state for many years after the laryngoscope had made observers familiar with the local appearances.

Such an eminent authority as Störk had, as late as 1880,§ declared that paralysis of the potsici muscles was one of rarest of laryngeal neuroses. Some cases had been reported previously by Von Zienssen, Bosworth and others, but the subject of bilateral paralysis of the abductors was more carefully described in 1878 by Semon.¶ He pointed out in the german edition of Morell McKenzie's book (1880) in a foot note the greater proclivity of the abductor filaments of the recurrent nerve to injury from disease or trauma. This was further elaborated by him in a paper published¶ in 1881. About the same time Rosenbach drew attention to the same phenomenon.** They established the fact, which has been occasionally known as Semon's 'law,' that when one laryngeal muscle alone is affected it is usually the abductor, the crico-arytenoidens posticus.

About this time Elsberg‡‡ noted that, although other muscular groups may recover with varying rapidity and completeness from paralysis, the power of the laryngeal muscles rarely returns.

Krause‡‡ attempted to invalidate the conclusions of Semon by advancing his theory of contracture. Many subsequent writers accepted the views of Krause. They claimed the contracture either with or without paralysis of the abductors was due to stimuli of various kinds, irritating either the nerve trunks or their cerebral centers. This idea had been advanced by Jeleneffy§§ in 1872, and was further elaborated by him in 1888. In 1875 Johnson||| had ad-

Greater Proclivity of Abductors to Paralysis.

The Contracture Theory.

*Berl. Klin. Woch., No. 20, 1873.

†Ibid., No. 3, 1873.

‡Trans. Coll. of Phys. of Philadelphia, 1875, Vol. I., P. 97.

§Klinik der Krankheiten des Kehlkopfes, 1880, P. 380.

¶Trans. of the Clin. Soc. of London, Vol. XI. P. 141 ff.

¶Archives of Laryngology, Vol. II. No. 3, 1881.

**Breslauer Aertzl. Zeitschrift 2, 3, 1880.

‡‡Philadelphia Med. Times, July 30, 1881.

‡‡Virchow's Arch. No. 98, 1884, P. 294.

Ibid No. 102, 1885, P. 301.

Arch. f. Physiologie, 1884, P. 566.

§§Berl. Klin. Woch. No. 26, 34 seq. 1888.

|||Trans. Med. Chir. Soc., London, 1875, Vol. LVIII, P. 29.

vanced an explanation to account for bilateral paralysis, due to pressure on one recurrent alone, which he believed was due to the ascending degeneration and involvement of the chiasm in the brain.

A vast amount of experimentation upon animals revealed variations in the effects produced by different strengths of the electric current applied to the recurrent nerve. These effects varied also according to the degree of anæsthesia produced.

These observations were brought out chiefly in the papers of Donaldson* and Hooper.†

The literature of the subject at this time grew to great proportions. The most important of the contributions which combated the views of Krause were perhaps those of Semon and Horsely‡ and of Risien Russell.§ The latter showed that the abductor and adductor filaments existed in the recurrent nerves each as separate bundles of fibres. This was also simultaneously announced by Onodi. So many aspects of the question of laryngeal normal physiology and pathology are still unsettled, that a critical and historical survey of the subject would not be satisfactory. Suffice it to say that after many years the contention of Semon and his school seem to have gained the ascendancy, and it is now supposed that median position of the vocal cord usually signifies some interference with a separate nerve tract either in the recurrent nerve or its cerebral origin.

The central innervation of the larynx was also developed, *paripassu* with the controversy in regard to the phenomenon of posticus paralysis. While Ferrier|| had in 1876 made some allusion to the phonatory movements of the larynx on cerebral excitation, and while Duret¶ had noted that the destruction of a convolution in front of and below the sigmoid gyrus abolished the power of barking in a dog. Krause's paper,** in 1884, was really the first of a series of many others, among them especially that of Semon and Horsely (l. c.), which has developed our knowledge of the cerebral center of laryngeal innervation.

The Central
Innervation
of the
Larynx.

*Am. Jour. Med. Sc., July, 1886.

†New York Med. Jour., July 4, 1885.

‡Brit. Med. Jour., Dec. 21, 1889. Phil. Trans. Royal Soc., London, Vol. V., 181.

§Proceedings of the Royal Soc., Vol. 51, 1892, P. 102.

¶The Functions of the Brain.

**Etudes Experimentales et Cliniques sur les Traumatismes Cerebraux, 1878.

**Ueber die Beziehung der Grosshirnrinde zu Kehlkopf und Rachen. Arch. f. Anat. und Physiologie, Pysiol. Abth., P. 203, 1884.

LARYNGEAL CANCER AND ITS EXTIRPATION.

I have already traced with some care the history of laryngeal growths and the operations for their removal up to the time of the perfection of the technique of the intra-laryngeal operation. It soon became apparent that the latter could not be extended with satisfactory results to malignant growths, especially at a time when their differentiation at an early stage was still undeveloped. We find, therefore, that at an early stage in the development of laryngoscopic diagnosis, intra-laryngeal procedures for their removal did little more than aggravate the local condition, and very soon such attempts were, for the time at least, all but abandoned.

Laryngotomy.

We have noted records of the opening of the wind-pipe for a foreign body a hundred years before, and although this had been occasionally repeated, it was not until 1834 that the operation was first done by Brauers* for a laryngeal polyp. Ten years later, Ehrmann (l. c.) again operated, supposing that it was the first time the operation had been performed for relief from a polyp. A preliminary tracheotomy had been performed; aphonia resulted, but the operation was otherwise a success, the patient dying subsequently from typhoid fever without recurrence. In 1865 H. B. Sands reported† an external operation as having been done in 1863 for laryngeal cancer which had been diagnosticated by laryngoscopy. The patient died within a year. Sands was at that time able to collect reports of eleven thyrotomies and thirty-nine intra-laryngeal operations for growths in the larynx. In the following year Cabot‡ reported an external operation for a laryngeal polyp. Balassa§ in 1868 reported three cases, one each of papilloma, carcinoma, sarcoma, operated on by laryngotomy. He demonstrated that this could be done without necessarily a loss of voice.

Thus far operations for laryngeal cancer, external as well as internal, had been uniformly disastrous, some of the patients surviving the operation, but none being freed for any length of time from recurrence. It appears, from reference to a french thesis,|| that A. M. Koeberle had suggested the possibility of total extirpation of the larynx in 1856. According to Foulis this was actually carried out successfully ten years later by Dr. Heron Watson for syphilitic disease. These facts, however, only came out later.

* The case is referred to by Albers in Graefe und Walther's Journal. Bd. XXI, 1834, P. 534

† New York Med. Jour., May, 1865, P. 110.

‡ Boston Medical and Surgical Jour., Vol. 74, P. 32, 1866.

§ Wien Med. Woch., No. 91, 92, 93, 1868.

|| Hermantier: Ref: Rev. des Sc. Medicales, T. IX, P. 298, 1877.

Czerny.* stimulated to experimentation by the report† of a case of laryngeal tumor extirpated externally by Schrötter, who expressed a wish that laryngectomy were a feasible operation, demonstrated on dogs its practicability. On the 27th of November, 1873, Billroth performed the operation on a man‡ with success. Heine§ and Mass|| repeated the operation in the following year. At this time Gussenbauer constructed his artificial larynx. Foulis reported¶ his first case in 1877. Lange performed the operation in America in 1879,** and by 1881 Foulis had collected the reports of thirty-two cases of total and six cases of partial laryngectomy. He reported these statistics at the International Congress in that year.†† The operation met there with sharp criticism. Two years later Butlin wrote a very complete treatise on laryngeal cancer, ‡‡and in the same year Cohen, in a careful analysis,§§ collected and analyzed sixty-five cases of the disease, and at that time arrived at the conclusion that extirpation of the larynx did not prolong life in these cases.

After this papers on the subject became very numerous. In the year 1886 alone, those of Newman (1), Lublinski (2), Hahn (3), Baratoux (4), Fränkel (5), Gerster (6), Lange (7), Park (8), Semon and Butlin (9), do not by any means exhaust the list.

Fränkel (l. c.) in that year reported the first successful intralaryngeal extirpation of a malignant growth and became a partisan of that procedure in selected cases. Semon and Butlin warmly advocated the preference of partial laryngectomy over total exsection, rejecting the latter as unjustifiable. Of late years these gentlemen have reiterated their views.

In January, 1887, the Crown Prince of Germany, afterwards the Emperor Frederick, began to suffer from the symptoms of laryn-

The Emperor
Frederick.

* "Versuche über Kehlkopf Extirpation." Wiener Med. Woch., 27, 28, 1870.

† "Beiträge zur Laryngoskopischer Chirurgie." Wien. Med. Jahrb., XVII, Bd. II, 1869.

‡ Reported by Gussenbauer, Archiv. f. Klin. Chirurgie. XVII, 1874, P. 343.

§ Ibid., 1876, P. 514.

|| Ibid., 1876, P. 507.

¶ The Lancet, Oct. 13, 1877.

** Archives of Laryngology, 1880, Vol. I, P. 36.

†† Transactions, Vol. III, P. 251.

‡‡ "On Malignant Disease of the Larynx." 1883.

§§ Trans. Coll. of Phys. of Phil., P. 353, 1883, April 4.

(1) Glasgow Med. Jour., Feb., 1886.

(2) Berlin Klin. Woch., Nos. 8, 9, 10, Feb., 1886.

(3) Berlin Klin. Woch., Nos. 4 and 49, 1887.

(4) Progrés Médical, Nos. 13 and 15, 1886.

(5) Langenbeck's Archiv., XXXIV, Hft. 2, Feb., 1887, P. 281.

(6) Annals of Surgery, III, 1886.

(7) Ibid.

(8) Ibid.

(9) Brit. Med. Jour., Nov. 20, 1886.

geal cancer. The unfortunate quarrels between his physicians are a part of the reminiscences of many comparatively young men. As yet the rancor cannot have all died out. It is therefore unwise here to more than refer to an incident, from which no one emerged with credit* except the unfortunate and illustrious patient.

While in the published accounts of the microscopic findings† the impression received by many was that the growth was of a benign nature, the subsequent course was one of malignancy to which this very estimable prince succumbed shortly after he became emperor.

The eyes of all the civilized world for months searched the daily papers for the distorted and unreliable news of the progress of the fatal malady. Patients suffering not from cancer of the larynx, but from "cancerphobia," filled the waiting rooms of the laryngologist. Not only the lay mind in morbid horror had its attention fixed on the malady, but the scientific interest of medical men was absorbed in the study of many of the problems of the subject. The relative merits of the intra and the extra laryngeal operation for laryngeal cancer were warmly discussed in the society meetings and in the medical journals. The question of the pathogenesis of cancer was universally discussed. Its evolution from benign forms of growth was strongly urged. At the International Congress in 1881 Solis Cohen had said: "I am afraid that laryngologists sometimes convert innocent papillomata into epithelioma by protracted manipulation continued too long." Lennox Browne entertained the same opinion. Semon warmly denied such a result. He immediately recognized the fact that if this belief were generally entertained, and it had been suggested by several others, a death blow had been dealt to all intra-laryngeal surgery. He therefore, by the patient collection of an enormous number of reports‡ from clinical observers all over the world, thoroughly negated the idea and thus rendered a great service to Laryngology.

Of scarcely less importance was the information as to the histology of epithelial growths brought out in the discussion aroused by this melancholy case. R. Virchow§ reported on the pieces first removed from the larynx of the German prince that presented no evidence of malignancy. Later he wrote|| on Pachydermia Laryngis

* Frederick, The Noble: Morell McKenzie, 1888.

Die Krankheit Kaiser Friedrich des Dritten, 1888.

† Berl. Klin. Woch. 1887, June 20, p. 445.

‡ Centralblatt f. Laryngol. V. No. 3, Sep. 1888, seq.

§ Berlin Klin. Woch. No. 25, 1887, p. 445. No. 28, 1887, p. 519.

|| Ibid No. 32, S. 585, 1887.

in which he described the condition as a simple hyperplasia of the epithelium over the vocal processes. He laid down the dictum that there is a sharp line of demarcation between the benign epithelial hyperplasia and the stroma, and anything of an epithelial nature below this line and unconnected with it is at least of a suspicious nature.*

In addition to the one which Semon's collective investigation settled, the questions brought into prominence by this case were:

1. The unreliability of a negative microscopical diagnosis in a case of suspected cancer.
2. The preference in the great majority of the cases of an external over an internal laryngeal operation.
3. The question quickly answered was, the necessity in all cases of an early diagnosis and a prompt operation in incipient cases.

Extirpation of the larynx rapidly became more common, and by 1890 Krause† was able to cite 219 cases of extirpation of the larynx, 160 of which were total exsection and 142 of these were for cancer.

J. Solis Cohen, notwithstanding his former condemnation of the operation, at first suggested the removal of the soft parts within the larynx, leaving the cartilaginous framework, but subsequently reported‡ a case in which the whole larynx and two rings of the trachea were removed, and the stump of the latter stitched to the episternal notch. The man survived and, though there was no communication between the pharynx and the larynx, he was able to articulate with distinctness by means of pharyngeal speech. The other alternative in these cases has been the insertion of a Gussenbauer prothesis.§ Of late years total extirpation of the larynx for malignant disease has found favor in Germany and America, while a more or less incomplete laryngectomy has been the favorite operation of Semon and Butlin and the English operators.

* See Berl. Klin. Woch. No. 47, 1887, Virchow insisted that he had only reported on the character of the pieces submitted to him for diagnosis, when he reported the first pieces removed from the Prince's larynx to present no evidence of malignancy.

† Allg. Wien. Med. Ztg. No. 15, 1890, P. 169.

‡ New York Med. Jour., Nov. 12, 1892.

Jour. of Laryngology, July, 1892.

§ J. Wolf; Deutsche Med. Woch., Nos. 3 and 33, 1892.

Berl. Klin. Woch. No. 21, 1892.

THE ACCESSORY NASAL SINUSES.

We have seen how completely and exhaustively the subject of the surgical treatment of the Antrum of Highmore had been dealt with in literature, largely before the 19th century. It has left little to add in the way of recording original advances since then, nearly all of even the latest procedures having been described in prae-laryngoscopic writings.*

After the beginning of the development of Modern Rhinology in the early eighties, interest was gradually aroused in the subject of accessory sinus disease. In the discussion at the meeting of the German Naturalists in 1886, the idea, traces of which we have seen in earlier literature, again arose as to the connection between sinus disease and ozænatous atrophic rhinitis. The etiology of maxillary sinus disease in the vast majority of the cases was at this time ascribed to carious teeth. Among those who accepted this view were Kilian,† Schmiegelow‡ and McBride.§

Mikulicz|| brought into vogue his operation of perforating the maxillary sinus with a trocar and canula from the nasal chambers, but the perforation through the alveolus still remained the more common procedure as long as the teeth were accepted as the chief factors in the etiology of suppuration.

At this time, also, Woakes drew attention¶ to the frequent coincidence of ethmoiditis and nasal polypus. Interest was soon aroused in America, and Dr. J. H. Bryan, in 1889, read a paper on the subject.

Considerable had been said as to the difficulty in diagnosing the presence of pus in the maxillary sinus, and the trocar of Krause was devised for exploratory puncture, irrigation, and the insufflation of iodoform and other powders.** Another method of diagnosis attracted much more attention. Dr. Theodor Heryng, in 1889, urged†† the idea of Voltolini—the electric transillumination of the antrum. McBride and Vohsen read papers on this subject at the International Congress in 1889. Lichtwitz‡‡ and Jeanty§§ wrote

Transillumination.

* There is an early American treatise, "Dissertation on the Diseases of the Maxillary Sinus," by Chapin A. Harris. 1843.

† Monatschrift f. Ohrenheilkunde, 10-11, 1887.

‡ Hospitals Tidende, Feb., 1888.

§ Edinb. Med. Journ., April, 1888.

|| Archiv. f. Klin. Chirurg., 3 Hft., 1887, XXX, p. 626.

¶ Nasal Polypus, 1887.

** Moritz Schmidt, Berl. Klin. Woch., No. 50, 1888, p. 1012. Friedländer, Berl. Klin. Woch. No. 37, 1889.

†† Berl. Klin. Woch., No. 35, 1889.

‡‡ Prager Med. Woch., 15, 16, 1892.

§§ Traité sur l'Empyeme latente, etc., 1891.

on the cases of latent suppuration in the Antrum of Highmore in 1890, '91, '92, pointing out that it was frequently bilateral. Writers became more cautious and critical as to the results of treatment. Many cases previously thought to be affections of the maxillary sinus were proven to have their origin at least in the other cavities. Bosworth, in 1891, wrote on the "Various Forms of Diseases of the Ethmoid Cells,"* and Grünwald published† a paper on affections of the frontal sinus. In the next year he published his well known work‡ on the diseases of the accessory sinuses, especial attention being directed to diseases of the ethmoidal and sphenoidal cavities. His radical views as to occurrence, complications and treatment produced a marked impression on rhinological observation and practice. Lichtwitz,§ in 1893, urged the practicability of reaching the frontal sinus through the nose by a canula, which has not been accepted as a judicious procedure by later writers.

Ethmoiditis

During these years the invaluable|| work of Zuckerkandl was the guide of surgical procedure and the inspiration of much work in the pathology of these regions. In 1877 Schalle had described¶ a method of reaching, without disfiguration, the nasal and aural cavities in the cadaver, but Harke,** in 1891, introduced a more practicable procedure. Subsequently, in 1895-6, Harke,†† Dmochowski‡‡ and E. Fränkel§§ have added very greatly to our knowledge of the morbid anatomy, while Luc, Hajek and Bryan have still further elucidated the surgical, microscopical and clinical aspects of the subject in more recent years.

Normal and
Pathological
Anatomy of
the Nasal
Fossæ.

BACTERIOLOGY OF THE NOSE AND THROAT.

As in every other department of medicine, the sudden development of bacteriology had its effect upon the study of diseases of the upper air passages. Perhaps the effect was not so profound, because it soon became apparent that neither was there that urgent need nor was there a possibility of applying to the nose the rigid practice of antisepsis.

We can not here, as we have in many other questions, so profitably pass in review the history of our knowledge of bacteria. It be-

* New York Medical Journal, Nov. 7th, 1891.

† Münchener Med. Woch., No. 40, 41, 1891.

‡ Die Lehre von der Nasen-Eiterungen, etc., 1892.

§ Annales des Maladies de l'Oreille, etc., P. 132, 1893.

|| Normale und Pathologische Anatomie der Nasenhöhle, etc., 1882.

¶ Virchow's Archiv, 1877. No. 71, P. 206.

** Ibid. Bd. No. 125, P. 410.

†† Beiträge zur Pathologie und Therapie der oberen Athmungs wege, 1895.

‡‡ Arch. f. Laryngologie Bd. III hft. 3, 1895. P. 255.

§§ Virchow's Archiv. Bd. 143, hft. I, P. 42, 1896.

Spontaneous
Generation.

gan in 1675 with the first improvement in magnifying glasses by Leuwenhoek. It includes the interesting story of what is called the fallacy of spontaneous generation. Attacked time and again, first by Redi in 1668, and by Vallisneri before the discovery of infusoria by Leuwenhoek, and afterwards by Spallanzani in 1777, Virchow with his "Omnis cellula e cellula," and Pasteur and Tyndall have destroyed spontaneous generation in our day, but further discoveries, reaching back toward the great First Cause, will surely start it again, for our minds cannot be freed from the idea that there must be a time now, just as man has always believed there was once in the past a time, when what we call the animate was incorporated *de novo* with the inanimate. Hæckel and his school of Monists are denying that such a thing ever was or ever is, but as yet material science has not, in generation, got back of the cell and its nucleus.

The idea of the microbial origin of disease doubtless started as soon as the existence of infusoria was generally known, so eager has always been the search of etiology in medicine. Indeed, the following reference is in itself ample proof of it: "In 1721 the pest broke out at Marseilles and in the south of France. Antrechau attributed the contagious principle to infusorial animalcules." (Spr. V. 504). However interesting it would be to follow the growth of the idea, we must pass directly to the account of our knowledge of bacteria of the nose and throat. The presence of fungi, visible as they are to the naked eye when grown to large masses, was naturally the first to be noted.

Mycosis
Pharyngis.

In 1873 B. Fränkel* drew attention to the occurrence in the tonsil and pharynx of what we know as mycosis pharyngis. In 1882 E. Fränkel,† and many others since then, have elaborated the subject. In the same year (1873) Hueter‡ claimed that the micro-organisms observed in nasal secretions were the cause of coryza. It was not, however, until after 1880 that the literature of the subject became abundant. Herzog§ reported their presence in the normal nose. B. Fränkel, in 1886,|| demonstrated pathogenic cocci in the naso-pharynx. In 1889 Von Besser¶ and myself** were able to demonstrate their presence likewise in the nasal chambers of healthy people††

* Berl. Klin. Woch., 1873, S. 94.

† Zeitsch f. Klin. Med., 1882, Bd. IV, S. 288.

‡ Allg. Chirurgie, 1873, P. 257.

§ Wiener Med. Presse, 1881, No. 29, seq.

|| Berlin. Klin. Woch., 1886, No. 17, P. 265.

¶ Beiträge zur Path. Anatomie, 1889, No. 6, P. 333.

** N. Y. Med. Journ., July 27, 1889.

†† For an account of the discussion as to the presence of micro-organisms in the healthy nose see the paper "Nasal Bacteria in Health," by Dr. W. H. Park and Dr. Jonathan Wright, N. Y. Med. Journ., Feb. 5, 1898; Journ. of Laryngology, March, 1898; Ann. des Mal. de l'Oreille, Feb., 1898.

The diseases with which the history of our subject is concerned, which have been profoundly affected in their nosology by bacteriological ideas are especially diphtheria and tuberculosis; but other affections have also been persistently ascribed to their influence. Atrophic rhinitis, accompanied, as it usually is, by the foul smelling secretions, very naturally fell under suspicion. Lowenberg described* in 1885 a bacterium constantly found in the secretions of ozæna and this has been many times confirmed by other observers since then. Klamman (1), Thost (2), Seifert (3), Strauch (4), Valentine (5), Hajek (6), Reimann (7), and others contributed to the bacteriology of ozæna within a few years after Lowenberg's paper, but the etiological importance of a bacterium, in spite of much recent literature as to other germs, has not been accepted as preponderating in the causation of atrophic rhinitis, and it can not be said that bacteriology so far has materially elucidated the mystery of the etiology and pathology of this disease. This is in striking contrast with the history of the diphtheria germ, the study of which has led to such astonishing results in pathology diagnosis and therapy, and in fact in biology in general.

Atrophic
Rhinitis.

So markedly are the symptomatic and prognostic features of that most frequent form of croupous inflammation of the mucosæ, associated with the presence of the bacillus, that all other forms are excluded from the term Diphtheria, which we have seen Bretonneau applying to the whole category. Looking back to the treatise of Bretonneau, we again see, as everywhere and always in medicine, that the progress has been one of advance in differentiation. We need not, therefore, review the abundant literature, which appeared in the long interval of nearly sixty years, which intervened between the work of Bretonneau and the discovery of the Klebs-Löffler bacillus.

Diphtheria

Löffler,† in 1884, described more fully and identified more clearly the bacillus of diphtheria previously observed by Klebs. Roux and Yersin,‡ in 1888, still further extended our knowledge of the bacterium usually found in croupous inflammations, so that it became possible as it had previously been with tuberculosis to clas-

* Deutsch. Med. Woch., Nos. 1, 2, 1885.

(1) Allg. Med. Central Ztg., 67, 1885.

(2) Deutsche Med. Woch., No. 10, 1886.

(3) Volkmann's Vorträge, No. 240, 1884.

(4) Monatsch f. Ohrenheilk., 6 and 7, 1887.

(5) Corresp. bl. f. Schw. Aertzte, P. 141, 1887.

(6) Berl. Klin. Woch., No. 33, 1 88.

(7) Inaug. Dissert. Würzb., 1888.

† Veröffentlichungen des Kais. Gesundheitsamtes.

‡ Ann. de l'Institute de Pasteur, 1888, '89, '90.

sify the disease from the standpoint of the bacteriologist* rather than from that of the pathologist. But before this we find frequent traces of the belief in the germ origin of the disease. Thus Shurly in America in 1879* stated his belief in the microbian origin of diphtheria. Roux and Yersin began their studies on diphtheria in 1888 (l. c.), and continuing them for several years, they investigated the nature of the bacillus and its toxins, and laid the foundation for the production of the immunizing serum by Behring†. C. Fränkel,‡ and Roux and Martin.§

Phlegmonous
Pharyngitis.

About this time attention was again drawn to that class of infectious disease of the tissues around the upper air tube of which Hippocrates had so much to say and of which Ludwig wrote (l. c.). Senator, in 1888, gave a very careful description|| of phlegmon of the peri-pharyngeal tissues, and numerous papers on the subject have subsequently appeared.

Intubation.

If bacteriology wrought great changes in the nosology of diphtheria, intubation, as introduced by O'Dwyer, brought about no less a revolution in the operative treatment. Unknown to him, the idea as we have seen, had existed in the very earliest records of medicine. It is a matter of conjecture how far Hippocrates introduced his tubes into the air-way, but that he passed these beyond the fauces is perfectly apparent. All through the history of medicine, especially before the Renaissance, and after the 18th century, the references are numerous to this Hippocratic manœuvre, but how often it was practiced is a matter of doubt, probably very infrequently. The first clear account of its use is in Bichat's description¶ of the operation as performed by Desault. He passed hollow sounds into the larynx, and gave temporary relief to a dyspnoëic patient, as did also a distinguished surgeon of Toulouse, following his example. This was near the end of the 18th century. Bichat gives careful directions as to the technique. They were to be passed through the nose. While Desault and perhaps others were occasionally successful in affording relief by operations performed in this manner, the operation could not rival that of tracheotomy. The same criticism may be applied to the revival of the practice by Loiseau in 1840*** and

* Trans. Detroit Med. and Library Ass'n, Feb. 1879, P. 13.

† Deutsche Med. Woch. Nos. 49 and 50, 1890.

Deutsche Med. Woch. No. 17, ff. 1893.

‡ Berl. Klin. Woch. No. 49, 1890.

§ Annales de l'Institut de Pasteur, No. 9, 1894.

|| Ueber Acute Infektiöse Phlegmon des Pharynx: Verhandl. der Berlin. Medil. Gesellsch. 1888, Bd. XIX, IIS. 10.

¶ Oeuvres Chirurgicales de Desault. Edit. by Bichat.

*** Referred by him to this date in a communication published in Gaz. des Hopitaux, 1858, p. 491.

by Bouchut who, in 1858, urged its use in the laryngeal stenosis of diphtheria.* The chief honor which Bouchut seems to have acquired was to draw the fire of his famous countryman, Trousseau, who had brought tracheotomy into greater vogue for the condition. Trousseau's predilection for the operation of tracheotomy, which he practiced with great frequency, no doubt had something to do with his unfavorable report on Bouchut's claims, but this predilection could not have arisen from the contemplation of his own results in diphtheria. They were atrocious. While, therefore, the idea had existed from hoary antiquity, and while during the preceding hundred years attempts were made from time to time to make it more practicable, there can be no question that success was first attained by Joseph O'Dwyer, who published first in 1885 the account† of his long, patient and persistent endeavors. The success which attended them is fresh in the minds of us all. The remarkable results attained of late years by the administration of antitoxin in laryngeal diphtheria has very greatly diminished the number of cases in which relief from dyspnoea in laryngeal diphtheria is imperatively demanded.

We must now continue our study of the history of tuberculosis in the upper air passages. There can be no doubt that the recognition of the bacillus, as the specific agent of contagion, had very much to do with the stimulation of the hope of finding a cure for its manifestations in the upper air passages. Its recognition in the early part of this century, confused as it was with syphilis, was nevertheless enough for the formation of a hopeless prognosis. The differential diagnosis between syphilis and tuberculosis of the larynx was still very incomplete when laryngoscopy came into use. Notwithstanding the false idea of Louis, which Rheiners' contributions‡ had fostered, as to the frequent coincidence of catarrhal laryngeal ulcers with tubercular disease of the lungs, Türck's atlas and graphic descriptions§ in 1866 did much to familiarize observers with the varying appearances of syphilitic and tubercular laryngitis. Five years before this, Gerhardt and Roth had recorded their experiences in the observation of cases they called syphilitic disease of the larynx,|| but at that early date in laryngoscopy much confusion in the differential diagnosis is to be expected. In fact we very

Tuberculosis

* Bull. de l'Académie des Sciences, Nov. 1858.

† Union Médicale, No. 130, p. 517, 1858.

‡ New York Medical Journal, p. 145, Aug. 8, 1885.

§ Inaugural Thesis "Die Histologie des Kehlkopfs," 1852.

Virchow's Archiv., No. V, p. 534, 1853. Ueber den Ulcerationen im Kehlkopf.

|| Klinik der Krankheiten des Kehlkopfes, 1866.

Virchow's Archiv., No. 21, P. 7, 1861.

Mixed
Infection.

early find the observation of what is still supposed to be the combined form of syphilitic and tubercular laryngitis. Schnitzler wrote of it in 1868,* and subsequently returned to the subject with increased interest and wider experience in 1890.†

Virchow's remarks on tubercle threw a flood of light on the morbid processes in the lungs, and did more than anything else to dispel the confusion which reigned as to the pathogenesis of tubercle and its affinities to caseous degeneration. It seems wonderful reading, even forty years after it was written, that about the only gaps he left in the correct description of the pathogenesis of tubercle were those which later were filled by the discovery of the tubercle bacillus. He thus refers to laryngeal tubercle: "In the very frequent tuberculosis of the larynx, small, flat, clear, gray or whitish gray swellings are found, which hardly project beyond the surface."‡ He rejected, with Rokitanski, the idea of Louis that laryngeal ulcers in phthisis pulmonalis are due to mechanical causes, and he declared the larynx is one of the best places in the body to study tubercle. In the matter of laryngeal ulceration he was not supported by Rindfleisch.§ who to some extent accepted the view of Louis. Ten years later we may note Bosworth maintaining the non-tubercular character and the curability of laryngeal ulcerations in phthisis.|| Schech,¶ in the following year, while admitting their occurrence, regarded them as very rarely simple catarrhal, but usually as tubercular. Krishaber, in 1881, while not reluctant to admit that laryngitis arising in a tubercular subject may become ulcerative without the morbid process having previously existed at that point, nevertheless recognized the tubercular form to be the usual one.** Perhaps the last important recrudescence of this attractive idea of Louis is to be noted in the monographs of Heryng,†† in 1884, who insisted that he had observed ten cases. Doubtless the entertainment of this belief had much to do with the subsequent enthusiastic manner in which he sought and claimed the attainment of a cure for tubercular laryngitis. At this time much interest was aroused by the discussion as to the question of the occurrence of a primary tubercular laryngitis.‡‡ Fränkel declared he had seen instances of it in which

Primary
Tubercular
Laryngitis.

* Wiener Med. Presse, No. 14, seq. 1868.

† Internationale Klin. Rundschau, No. 34, seq. 1890.

‡ Die Krankhaften Geschwülste, 1864, Bd. VII, P. 642.

§ Lehrbuch der Path. Anat., 1867-69.

|| Boston Med. and Surg. Journ., P. 544, April 17, 1879.

¶ Aertzl. Intelligenzblatt, No. 41, 1880.

** Trans. Internat. Med. Cong., 1881, Vol. III, P. 209.

†† Contribution a l'Étude des Érosions, dites Catarrhales

‡‡ Vide. Trans. Internat. Med. Congress, 1881, III, P. 213.

pulmonary phthisis had later supervened. Voltolini doubted if this were actually the case. Krishaber declared he had never seen a case recover, but others were less skeptical, while Gerhardt thought catarrhal ulcers in pulmonary phthisis subsequently became tubercular. Shortly after this John N. McKenzie,* Schnitzler† and Percy Kidd described cases of non-ulcerative tubercular tumors of the larynx.

The contagiousness of phthisis had been asserted from time to time in the history of medicine, and Villemain had proved it experimentally in animals, but it remained for Koch, who had noted the spores of the anthrax bacillus, in 1876, to demonstrate the tubercle bacillus, in 1882. Immediately the diagnostic value of its identification in ulcers of the larynx was appreciated, though perhaps somewhat exaggerated, by Fränkel, in 1883,‡ in establishing their tubercular character. Much stress was also laid on this diagnostic value of the bacillus by Hunter McKenzie§ and Voltolini.¶ The latter however doubted the proof of its infectiousness in man.

Virchow had noted (l. c., P. 651) the occurrence post-mortem of nasal tuberculosis. Willigk had also observed it and in 1877 Laveran had spoken of a case of a nasal lesion he had observed which he supposed was tubercular, but Riedel seems to have been the first to report¶ well authenticated cases. Later Tornwaldt reported** a case, and Weichselbaum advanced†† the assertion, thus far unsupported, that the severe form of what he called scrofulous *Ozæna* is dependent on miliary tubercle. He also pointed out the rarity of these cases. Cartaz,‡‡ Schaeffer§§ and Bresgen|| reported a number of cases in 1887.

In the 17th century Marcellus Donatus¶¶ refuted the declaration of Galen that ulcers of the *arteria aspera* are easily cured. It was in 1886 that Heryng first asserted+ the possibility of the cure of tubercular laryngeal ulcers without special treatment. Subsequently× he reported twenty-two cases in which favorable results had been attained by curettage and the cutting forceps. H. Krause had previously recommended the local application of lactic acid, and this suggestion Heryng also adopted. Moritz Schmidt÷ at that time spoke of the utility of tracheotomy in these cases. In Germany the surgical treatment of tubercular laryngitis has found many partisans, but on the whole it has not yet made much headway in other countries, and perhaps has not met with the trial it deserves, owing to the distrust aroused by the enthusiastic and exaggerated claims of the early advocates of the method.

The Tubercle
Bacillus.

Nasal
Tuberculosis

Curability of
Laryngeal
Phthisis.

* Archives of Medicine, 1882, P. 107.

† Wien. Med. Presse, April 1883, P. 446, Nov. 1884, P. 1397.

‡ Berl. Klin. Woch. Jau. 22, 1883, April 7, 1884.

§ Edinburgh Med. Journ. Feb. 1884.

¶ Allg. Wien. Med. Ztg., 13, 14, 1884.

¶¶ Monatsch. f. Ohrenheilk., 3 and 4, 1884.

* Deutsche Zeltsch. f. Chirurgie, 1878, P. 56.

** Deutsche Arch. f. Klin. Med. No. 27, 1880, P. 586.

†† Volkman's Klin. Vorträge, 168-169. Allg. Wien. Med. Ztg. No. 27, 1881.

‡‡ La France Medicale No. 84, 1887.

§§ Deutsch Med. Woch. No. 15, 1887, P. 307.

|| Deutsch Med. Woch. No. 30, P. 663.

¶¶ De Historia Medica Mirabili Lib. III, Cap. I, Edit., 1613.

+ Deutsche Med. Woch., No. 48, 1886.

× Ibid., Feb. 17, 1887.

÷ Deutsche Med. Woch., No. 49, 1886.

We cannot pursue the history of tubercular disease of the air passages further with profit. Its problems are still the most important to the human race of any in the domain of medicine. Very few of them have as yet been solved. The discovery of the tubercle bacillus was only the beginning of the solution of many of them. Perhaps the problem most intimately associated with our specialty is that of the pathway of infection by the tubercle bacillus after coming into contact with the human organism. This question was first prominently broached by Dr. Bollinger in 1890.* With the subsequent development of this, with the discussion in regard to systemic infection and many other questions, we are still actively engaged.

THE STRUCTURE OF ŒDEMATOUS NASAL POLYPI.†

Without entering into an account of the researches, which have developed our knowledge of the histology of other morbid conditions of the mucosa of the nose and throat, it is advisable that a few words should be said of the history of one question since it involves the proper conception of intra-nasal pathology. This latter is bound up inextricably with the story of the structure of the nasal polypus. We have followed that down to the time of Morgagni. It remains to follow it during the nineteenth century. In the surgery of Chelius‡ as late as 1852, we find that he regarded the nasal polypus as a local infiltration of the mucosa with serum, a view of which we have seen prevail almost since the downfall of the Galenic pathology. Frerich§ is said to have been the first to point out that its surface is covered by epithelium similar to that of the surrounding tissue.

On referring to an early (1854) American edition of Paget's "Surgical Pathology," we find he classes nasal polypi among the fibro-cellular tumors (P. 386), and in this class he also put those growths shortly afterward described by Virchow under the name of myxoma in the "Krankhafte Geschwülste" (ed. 1863, P. 417), who having previously described myxoma in other publications, dwelt upon the relationship it bears to the retrograde metamorphosis of fatty tumors and of fat tissue, being frequently therefore found in connection with lipomata. He states that myxoma "in adults is relatively infrequent, even in the atrophic metamorphosis of fat tissue in the mucous membranes."|| I need only refer in passing to the remarkable mistake made by Billroth¶ in ascribing the structure usually found in rectal polypi to those found in the nasal cavity. He says he examined twenty cases of nasal polypi, and they were nearly all adenomatous in structure.

* *Münchener Med. Woch.*, No. 33, 1890, P. 567.

† For a resumé of the history of this subject see a paper by me in the *New York Medical Record*, Jan. 26, 1901.

‡ *Handbuch der Chirurgie*, Bd. II., P. 530, 7th Edit. 1852.

§ *De Polyporum Structura Penitior*, 1843.

|| In a late address *Virchow Arch.* Bd. 162, P. 163, hft. I, he remarks incidentally as to this matter: "Es ist ein blosses Spiel mit Worten, wenn man junge pathologische Zellen und Gewebe embryonale nennt." Some account of the question of the doubt as to Virchow's classification of myxoma may be readily found in Councilman's article on "Myxoma" in Wood's "Reference Handbook of the Medical Sciences."

¶ "Ueber den Bau der Schleimpolypen." 1854.

It needs only a reference to a few of the modern text-books on pathology to show that the definition of Virchow as to myxoma, in spite of much well grounded criticism, is still universally accepted, and yet in not a few of them has crept the idea that the structure of the nasal polyp conforms to it. Billroth* and Cornil and Ranvier (1884) follow him explicitly. Birch-Hirschfeld (1887) speaks of nasal polypi as soft fibromata or myxo-fibromata (Vol. II, P. 381), but evidently he had no experience of his own with these growths, because in his description of myxoma (Vol. I, P. 151) he describes them in the sense of the others. He misquoted Hopmann, who, as we shall see presently, directly repudiated the idea of myxoma of the nose. Weichselbaum (1892) gave a characteristic woodcut and the usual description of true myxoma. Ziegler (Ed. 1895) says that nasal polypi are made up of œdematous connective tissue and mucous tissue, and must therefore be ranked among the fibromata and myxomata (Vol. II, P. 625). but he differs in no way from other pathologists in his description of the latter (Vol. I, P. 397). which are always combined, he says, with the histological forms of other tumors. Delafield and Prudden, in the last edition of their "Pathological Anatomy," state that it is frequently difficult to distinguish between the two; but in the illustration they give of the structure of a mucous polyp of the nose, there is no resemblance to the picture they give under a higher amplification as typical of myxoma.

When we attempt to find who was responsible for the introduction of the term myxoma into nasal pathology, we are baffled by the apparent insidiousness of the process. It seems to have crept in through its use by writers who were either unfamiliar with the myxoma of Virchow, or else unfamiliar with the histological details and the pathogenesis of nasal polypi.

The first mention of a myxoma occurring in the nose which I have been able to find is a report by S. W. Gross in 1871.† We find here the myxomatous error in full bloom.

A glance at the text-books on the nose, which began to appear first a quarter of a century ago, convinces one that the term, if not the conception, of Virchow was well established in the literature of the subject. Michel, indeed, who published in 1875 the first extended work of modern date on the diseases of the nasal cavity, did not, so far as I can see from the translation of Shurly, speak of the polypi as myxomatous, and his conception of their etiology and pathogenesis does not coincide with the view of there being a new growth of tissue. Cohen, whose work first appeared in 1879, accepted the classification of myxoma. Störk, in 1880, did not use the word in connection with them, but in Bosworth's first edition in 1881, they are so classified. Zuckerkandl‡ very curiously fell into the serious error of Billroth, quoting him with assent in saying they are adenomatous, but he makes no reference to them as myxomatous. Beverly Robinson, in his treatise on "Nasal Catarrh," the second edition of

Nasal
Myxoma

* "Surgical Pathology," 1882.

† Vide. Trans. Path. Soc. of Philadelphia, 1871, P. 219.

‡ "Normale und Pathologische Anatomie der Nasenhöhle," edition 1882, P. 76.

which appeared in 1885, referred to nasal polypi as myxomatous. Morell Mackenzie, began his chapter on nasal polypi by saying they are new formations nearly always of a myxomatous character.* I will not pursue text-book literature into more recent time. Suffice it to say that in nearly all of the special works on the nose, this error in nomenclature, if not in conception, still exists.

Return to the
Conception
of Serous
Infiltration.

It is to Hopmann we are indebted for the first serious attempt to dispel it.† In 1885, he refuted, not only the mistake of Billroth as to their adenomatous nature, but, quoting from the German translation of Mackenzie's book, he denied the latter's assertion as to the myxomatous character of nasal polypi. They are, he asserted, to be looked upon as soft, œdematous fibromata. Chiari, in 1887, said: "On the ground of a histological examination of twenty-three nasal polypi, polypoid hypertrophies, and papillomata. I came to the conclusion that also in nasal polypi, it was only a matter of serous infiltration of the hypertrophy of the mucosa." In many subsequent papers this view has, I think, been incontrovertibly established—most conclusively, I think, by Hajek‡—and it has been urged in this country by myself§ and others. The most recent paper dealing with this subject exhaustively is that of Cordes (Arch. f. Lar. Bd. XI. Hft. 2). There is very little to be found in it which has not been stated previously by other observers, but it is a very satisfactory confirmation of much work done by others, the publications of which are scattered through rhinological literature.

And now having followed the story of our art over its period of three thousand years and more; from the dim and misty past of incantations and exorcisms, from the early days of Grecian civilization when Hippocrates made a specialty of medical science separating it from the other sciences, to the days of the microscope, and the spectroscope, and the stethoscope, and the laryngoscope: when the space of one man's life is insufficient for him to know anything but the rudiments of our art in many branches, and be, at the same time, in a position to advance in any degree the boundaries of even its smallest province, we may pause with, I trust, a just consideration and appreciation of the labor of our predecessors. Our knowledge has been built up, we have seen, not by the mushroom activity of any one period, or of any one school of medicine, or by the premature birth of an idea or theory, but by the patient, painstaking, laborious exertions of many generations of earnest men, working, for the most part, without expectation or perhaps desire: certainly without the attainments of those rewards, by which not only the layman, but alas, even the average member of our own art, measures what he calls success. To him who knows the joy of work, this phenomenon needs no explanation. To the rest of mankind no explanation would suffice.

* Am. Ed., 1884, Vol. II, P. 350.

† Monatschrift für Ohrenheilkunde, 1885, June, P. 161. It is less clearly combated in his paper in Virchow's Archiv., 1883, No. 93, P. 213.

‡ Arch. f. Lar., 1896, Bd. IV, Hft. 3, P. 277.

§ N. Y. Med. Journ., Nov. 4, 1893.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Stated Meeting April 23, 1902.

Emil Mayer, M. D., Chairman.

Oedematous Polyp of the Larynx Causing Sudden Dyspnoea.

Dr. C. G. Coakley presented a specimen taken from a man of forty-two years, who had been perfectly well up to three days before coming under examination. At that time he was suffering from dyspnea, and examination showed a large whitish mass filling the whole of the upper part of the larynx. It was removed entire with a forceps having serrated jaws. The mass was attached to the right ventricular band near its anterior portion. The probability was that the mass had been in the larynx for a considerable time, but had not caused dyspnea until it had suddenly become larger from edema. It was an ordinary edematous polyp. There had been no recurrence since the operation.

Absence of Frontal Sinus on Both Sides.

Dr. William H. Haskin presented this anatomical specimen. He said that Turner had examined over 500 cases and had found absence of the frontal sinus in 12 per cent.

Dr. Wendell C. Phillips said he desired to emphasize the fact that absence of the frontal sinus was not at all uncommon. In his operative surgery teaching he had frequently observed absence, or almost complete absence of this sinus, particularly in the colored race.

A Mass of Polyp Removed From the Naso-pharynx.

Dr. J. A. Kenefick presented a conglomeration of polypi. After having removed a series of small polypi from the nose he found one hanging down into the nasopharynx. This he had seized with forceps and snapped off. It was about $3\frac{1}{2}$ inches long.

Effect of Paraffin Injections in Deformities of the Nose.

Dr. Francis J. Quinlan presented a photograph to show the effect

of paraffin injections in destructive ulceration of the nose. The nostril in this case had been almost collapsed. This was the twenty-second case of paraffin injection that he had done during the past year, and all had been successful except one. In that one there had been suppuration followed. With the exception of a feeling of fullness or of frontal headache there had been no annoying symptoms after the injection of the paraffin. The technique was still attended by some difficulties. In making these injections one must be careful not to throw it directly under the skin; the tissues should be previously loosened by manipulation. The case under discussion was one of specific ulceration and destruction, so that the tissues were very tense owing to the contractions. There was an absence of the septum cachetigium, of plate of ethmoid and vomer, and consequently some of the material during the injection escaped into the nose. By pressure over the bridge of the nose in a semicircular form one could prevent the paraffin from extending up to the bridge of the nose as well as laterally. Difficulty had been experienced in preventing the paraffin from congealing in the syringe, and also in securing perfect asepsis. It was better to inject too little, and repeat the injection, than to inject an excessive quantity and perhaps excite a pressure necrosis. The doctor will show at the next meeting a new instrument for keeping the paraffin at a liquid temperature during the injections, thereby overcoming many of the difficulties experienced by many during these operations.

The Tilley Tonsillar Punch Forceps.

Dr. James E. Newcomb presented the tonsillar punch forceps devised by Dr. Herbert Tilley, of London. A local instrument maker here had attempted to make the forceps for him, but had not succeeded; consequently he had imported one from the original makers. The instrument seemed to cut very cleanly and satisfactorily.

Dr. Coakley said that he had been using these forceps for some months, and had found them better than any other tonsillar punch with which he was familiar. He had used it for removing pathological growths at the base of the tongue. It would be an advantage if the instrument could be made a little less clumsy.

Dr. E. Mayer said that this instrument reminded him of the one devised by Dr. Farlow. The latter worked perfectly, but was rather heavy and bulky.

Dr. Newcomb said that he had tried some of the smaller and

more lightly constructed tonsillar punches, and had found that after engaging the tissues the handles of the instrument would spring, and the tissues would be pinched but not cut through.

A Tumor of the Tongue.

Dr. A. B. Duel presented a well-preserved Italian of nearly seventy years of age. About one year ago he had first noticed a little stiffness of the tongue, and six months later he had begun to feel pain referred to the left ear. At present this pain was so severe as to require the use of morphine to secure sleep. There was a distinct history of syphilitic infection forty years ago. There was a tumor of the tongue, which had increased in size during the two months he had been under observation, despite the fact that the man had been receiving iodide in large doses, as much as 240 grains a day. There had been no ulceration. The glands on the left side had increased considerably in size since the patient had first come under observation. Some of those who had seen him were of the opinion that the growth was malignant, with which opinion the speaker was inclined to agree after the therapeutic test he had made. The case would be shown again in two or three months.

Dr. E. Mayer thought the growth was undoubtedly malignant. He would not suggest a surgical operation for this patient, but called attention to the fact that the X-rays were being employed largely for inoperable cases and this seemed to belong to that category.

Dr. F. J. Quinlan thought that a growth of this nature lasting for one year should by this time show some evidence of breaking down if it were malignant. He was inclined to give some weight to the specific element, and the macroscopic appearance of the tumor seemed to him to favor this view. Within a year he had seen a similar tumor of the tongue which had diminished in size under antisyphilitic treatment.

Dr. M. D. Lederman suggested giving hypodermic injections of one-sixth of a grain of the bichloride of mercury daily until constitutional effects were produced. He recalled the case of a woman of forty years, who suffered from painful deglutition due to a growth of uncertain nature at the tongue. She received twenty-five hypodermic injections of one-sixth of a grain of the bichloride without any other symptom than salivation. The growth disappeared in the course of a month.

A Case of Repeated Intubation Followed by Tracheotomy.

Dr. Duel also presented a boy whom he had presented at the meeting of the Eastern Section of the American Laryngological, Rhinological and Otological Society two months ago. At that time he was wearing a retained intubation tube and he was presented now for the purpose of showing that a complete cure had been accomplished. The boy had developed laryngeal stenosis during an attack of smallpox, and had been intubated. Auto-extubation had taken place so frequently that tracheotomy had finally been done. On attempting, after a few weeks, to introduce an intubation again it was found that bands formed just above the tracheotomy wound prevented the insertion of the tube. Dr. Duel had then done a thyrotomy and had inserted one of the retained intubation tubes devised by Dr. John Rogers of this city. After six weeks the clamp of this tube was removed and the tube allowed to remain. After three or four weeks the tube was coughed out, and since then the boy had been well. The voice, although still husky, was very strong and would probably improve still more.

A Case Showing Immobility of the Left Arytenoid Cartilage and Vocal Cord.

Dr. J. A. Kenefick presented a young woman who had come to him a few weeks ago complaining of hoarseness. Examination showed complete immobility of the left arytenoid cartilage and vocal cord. The family history was excellent. Dr. J. E. Stubbett had examined this patient with the X-ray, and thought he made out a distinct dilatation of the aorta. Dr. C. H. Knight had also seen the case, and had suggested paralysis instead of fixation.

Dr. E. Mayer was disposed to look upon the case as one in which an echondrosis was the cause of the hoarseness.

Congenital Malformation of Nose and Adjacent Structures.

Dr. C. G. Coakley presented a young woman who had come to the New York Eye and Ear Infirmary the latter part of February complaining of inability to breathe through the nose. There was a large mass that could be easily seen on opening the mouth. It was pale, and presented an appearance not unlike that of a polypus. On applying a snare around it it was found to be quite friable and lobulated, and had almost a fatty feel. It had been examined microscopically, but those who had made these examinations were not agreed as to the nature of the growth. A good many fragments were removed. The anterior nares were markedly occluded

by a congenital deformity. On introducing the finger into the nostril it was possible, however, to push the mass back into the nasopharynx, and then it was comparatively easy to remove it. Having done this, the whole of the outer wall of the nasal cavity was found to be eroded, and on further exploration the antrum was discovered to be filled with granulation tissue. The whole of the lower and inner wall of the orbit had been absorbed. At present she was wearing the Kyle tubes. Dr. Dunham was inclined to think that the growth was a sarcoma. The patient, who is thirty-two years of age, had never menstruated. Dr. E. H. Grandin had examined her, and found an absence of the vagina and uterus, which was of interest in connection with the malformation of the nose. There was no history of hemorrhages from the nose having occurred spontaneously, but there was bleeding from the nostril on the slightest touch.

Dr. Mayer said that this case reminded him of the case of a young man sent to him from a distance. There had been a great deal of hemorrhage, and the tumor was removed, and on examination, declared to be a malignant growth. The tumor had occupied the middle turbinate. A second operation was done for a recurrence of this growth. Subsequently he had come under Dr. Mayer's observation, as no growth was then visible no immediate operation had been advised. Two or three months later there was occurrence; several large pieces were removed with a cold wire snare, and submitted to a pathologist, who could find no evidence of sarcoma, and believed the growth to be syphilitic. The man was at once put upon inunctions and the remainder of the growth promptly and completely disappeared. There was absolutely no history of syphilis. The young woman presented by Dr. Coakley, having other malformations and evidences of insufficient development, would suggest congenital syphilis, and he thought treatment should be carried out along this line most thoroughly.

Dr. M. D. Lederman said that some years ago he had presented to this Section a patient with an extensive growth in the nose. The growth bled profusely, and a portion examined by the pathologist was reported to be a small round cell sarcoma. Coley's toxins had been tried with unpleasant effect. Dr. Dawbarn then ligated the external carotids on both sides, and after three months the extensive growth had been reduced about two-thirds. In time, however, the growth again became large, and a radical operation (removal of the superior maxilla) was performed. It was now

five years since the operation, and he understood that the man was still alive, without recurrence. Dr. Dauburn has reported good results from ligation and excision of the external carotid arteries and collateral circulation in these class of cases.

Dr. Coakley said that his patient had been operated upon three or four years ago by some surgeon in Dresden, who removed large pieces from the nasopharynx. He would be happy to adopt the Chairman's suggestion about the treatment, and would report upon the case later.

Catarrhal Ulceration of the Vocal Cords.

Dr. W. C. Phillips reported this case. He said that a careful study for twelve years of a patient apparently suffering from catarrhal inflammation of the vocal cords had proved to be exceedingly instructive to him. The man had first come to him in 1891. He was apparently in perfect health and was of excellent habits. At that time there was slight dyspnea and hoarseness, but no cough or expectoration. The temperature was normal. Laryngeal examination revealed a nodule at the junction of the middle and posterior thirds of the right vocal cord, and a small ulcer on the cord, apparently involving only the mucous membrane. Applications of nitrate or silver were made to the ulcer, and the man was given small doses of iodide of potassium, and was advised to rest the voice as much as possible. This treatment caused the ulceration to improve but a business trip took him to the South for three weeks, and upon his return it was entirely healed. The man had suffered from several similar attacks since then, almost always in the winter months, but no special cause could be discovered. Improvement took place quickly on taking a trip to Bermuda. The last attack had been unusually severe, but this was to be explained by the fact that it had been brought on by excessive voice strain. A search through the literature showed but scant mention of this class of cases. Dr. Kenefick had told him of two similar cases. One of these was that of a physician who developed an attack of laryngitis while in the White mountains, and with this attack ulcers appeared on the vocal cords. Healing was slow. The other case was that of a man of sixty-five who complained of fatigue and distress after talking for an hour to a Bible class. Examination showed redness of the right vocal cord, and a shallow ulcer just over the tip of the vocal process. There was no marked induration or glandular swelling. Dr. Lefferts had seen the case, and had diagnosed it as catarrhal ulceration of the vocal cords. The

speaker said that he was of the opinion that these ulcerations were dependent upon climatic conditions.

Ankylosis of the Crico-Arytenoid Articulation.

Dr. D. Bryson Delavan presented this paper. He said that the differential diagnosis between paralysis and ankylosis should be easy, but in practice such was not always the case. Certain ankyloses following violent acute inflammations of the larynx were somewhat difficult of recognition. Syphilis, gouty arthritis and tuberculosis were common causes of ankylosis. Four illustrative cases were reported, of which the following is a good example: This case was one of typhoid ulceration of the larynx, the only case of the kind that he had seen recover. The patient was 35 years of age, and the attack of typhoid was severe and complicated. About the sixth week the voice became hoarse and deglutition difficult. The larynx was intensely congested, and an ulcer developed to the right near the posterior commissure. It was about three-eighths of an inch in diameter, deep and destructive, and surrounded by marked inflammation. From the beginning the symptoms were urgent and at times life was threatened, but after ten days the ulcer began to heal and the edema to subside. During the early part of the attack the movement of the arytenoids became restricted, and motion finally ceased permanently on the right side. After a lapse of several years this patient was found to be in robust health with increased chest expansion.

Referring to the treatment, Dr. Delavan said that when the fixation was due to a more or less chronic inflammation or to lesions causing much thickening or deformity of the surrounding parts, radical measures might be demanded. If the breathing space were sufficient, the existing inflammation should be subdued as quickly and thoroughly as possible, and then the physician should refrain from all interference, especially mechanical, which might irritate the parts. The patient should study the best methods for economizing the production of the voice as well as use the voice only in moderation. Gymnastic methods should be practiced which were calculated to strengthen the chest and increase its expansion. Vocal gymnastics and proper methods of voice production were essential parts of the treatment of these cases. Most of the patients that he had seen had enjoyed good health, and their success in life had been very little impaired.

Dr. M. D. Lederman said that he had expected to present this evening a patient illustrating the difficulties of diagnosis. The

patient was a man about forty-two years of age having some difficulty in swallowing, and speaking in a guttural manner. He had been examined most carefully and no disease found in the chest or in the blood vessels. The question of diagnosis was still open, as the man had no cough and had not lost weight. The local affection presented an ankylosis of the left crico-arytenoid articulation; no history of rheumatism or syphilis could be obtained. At present the therapeutic test with iodide of potash, was being carried out.

Dr. F. J. Quinlan said that the Section was very grateful to the author of the paper for having called attention to an almost new subject in laryngeal disease. The points in the differential diagnosis of paralysis and ankylosis had been brought out so fully and clearly as to require no further discussion.

Dr. Kenefick said that he had seen cases of ankylosis in dispensary practice in which voice production had been produced through the agency of the false vocal bands. He had seen a case of this kind in which after a few words had been spoken the arytenoids came into action and the voice then became natural. This patient had improved rapidly under the use of the salicylates. There was no doubt that fixation of the left vocal band was always suspicious of pressure on the left recurrent laryngeal nerve, and such pressure should be eliminated notwithstanding a precedent attack of acute inflammation of the larynx.

Dr. E. Mayer spoke of the class of cases in which the fixation was not very pronounced. He would like to hear more regarding the treatment of the ankylosis when already established.

Dr. Delavan said that a firm and complete ankylosis of the crico-arytenoid cartilage not of cicatricial origin could not be broken up by means yet known. The best treatment, therefore, consisted in removing all irritation from the larynx, subduing all thickenings and giving as much flexibility as possible to the opposite arytenoid. Moderation in the use of the voice should be enjoined, and the patient should be taught to use his voice economically. He should also be placed under the best climatic influences. Cases of acute laryngitis should be carefully watched, and when there was fixation, even of a temporary character, every effort should be made to bring about resolution as rapidly as possible.

BERLIN LARYNGOLOGICAL SOCIETY.

Session of April 25th, 1902.

Dr. Stuhmann demonstrated a new spraying apparatus where carbonic acid escaping automatically from a small tube attached to the neck of the apparatus is the propelling force. A fine spray of several atmospheres' pressure can be delivered and easily regulated.

Influenza Pharyngitis.

Dr. Treitel reports a case of laryngitis occurring in his private practice, where the bacteriological examination gave evidence of the presence of the typical influenza bacillus. This was again found with the recurrence of the symptoms and corroborated the diagnosis. Treitel also reported a case of influenza where the pharynx was especially involved. This began as an angina and after a few days the faucial tonsils, the palatine arch and the posterior wall of the pharynx were covered with a grayish-white exudation. This mass was removed in the form of flat patches. Three weeks after recovery the same symptoms and exudate reappeared in a milder form, this time showing as small blebs. Treitel suspected the presence of the influenza bacillus, and with the re-appearance of these symptoms the bacteriological examination confirmed their presence. Treitel believes that the oval-shaped, opal-colored spots or patches on the tongue appearing with this form of pharyngitis is pathognomonic of influenza.

The discussion following the report of this case developed the fact that the symptom complex appearing in the larynx during influenza is not yet satisfactorily explained as to its pathologic and histologic character. Dr. Ruhemann maintains that the symptom complex noted in this form of laryngitis and pharyngitis is pathognomonic of influenza, and is of the opinion that the finding of the influenza bacillus corroborates the influenzal character of these affections.

Concerning the Bacteriology of the Nose.

According to Drs. Schlier and F. Klemperer, the investigations minutely described in the Leyden Jubilee Publication prove conclusively that the bacteria found in rhinoscleroma and ozoena are not of a specific nature, but identical with that of the pneumococcus Friedlander, morphologically as well as biologically.

CHICAGO LARYNGOLOGICAL AND CLIMATOLOGICAL SOCIETY.

Meeting held April 21, 1902.

Reported by Edwin Pynchon, M. D.

Dr. Moreau R. Brown, President, in the chair.

Dr. P. J. W. Farrell reported the treatment of two cases of saddle nose in which the deformity had been satisfactorily corrected by the subcutaneous injection of melted paraffine. A strong syringe with large needle is required.

Dr. Chas. M. Robertson reported a case of fibro-sarcoma of the soft palate and tonsil in a male patient aet. 62, caused by injury with a toothpick. Patient appeared for treatment eight weeks after the injury. The tumor was rapidly growing and reached from the base of the left palatal arch up to the Eustachian tube and extended forward in the mouth to within one inch of the incisor teeth. While the pain had been slight the tumor interfered seriously with both respiration and deglutition. One week after the microscopical examination had been made the tumor was removed under chloroform anesthesia, and was found to be encapsulated, therefore a favorable prognosis was made. Up to the present time, twenty months after the operation, no signs of a new growth have appeared.

Dr. E. F. Ingals mentioned a case of nasal fibro-sarcoma which occurred in a boy aet. 13 and which after operation gradually reformed so as to completely occlude the nose and cause prominence of the right superior maxilla and destroy the sight of the eye on that side. Eventually, several years thereafter, the tumor almost entirely disappeared by atrophy.

Dr. William E. Casselberry exhibited a case in which the superior maxillary bone on one side had been resected on account of intranasal fibro-sarcoma. As a result of the operation a traumatic cleft of the hard palate remained. As a first step of the operation the external carotid was ligated. The tumor was found to be encysted and was quite easily peeled out with the finger. Following the operation a paralysis of the right side occurred, but has been gradually diminishing.

Dr. A. M. Corwin presented a male patient aet. 66 suffering from carcinoma of the epiglottis, which had developed within three months. Pain has been slight except a moderate degree of dysphasia. There is no cough and the voice is unimpaired. There is an absence of glandular enlargement and of swelling of adjacent tissues. The progress has been slow and the patient has not lost in weight.

Dr. George E. Shambaugh presented a specimen, being a large bony air cyst of the anterior end of the middle turbinal. He regarded it as an enlargement of an ethmoid cell.

Dr. Otto T. Freer read the history of "A Case of Phlegmonous Laryngitis Terminating in Abscess in Front of the Larynx" in a male patient aet. 54, which came on suddenly during the night two months ago. Dyspnea was pronounced though no pain was complained of. Solids could not be swallowed, but by drinking slowly fluids could be taken. A tracheotomy under local anesthesia was done March 2. The abscess contained about two ounces of pus. The tube was removed five weeks after the operation, the patient making a good recovery.

Boro-Chloretone, the New Surgical Dressing.—WALTER P. ELLIS, M.D.—*The Am. Practitioner and News*, March 15, 1902.

According to the author, the local anesthetic quality of the new hypnotic, Chloretone, united to the antiseptic and healing properties of boric acid, as is found in the new combination (Boro-Chloretone, P. D. & Co.), forms an ideal preparation for the purposes for which iodoform is extensively used, being possessed of those properties common to the latter drug without its disagreeable odor, and the attendant danger of iodine when long continued. The author claims to have had Boro-Chloretone in constant use since its first appearance.

F. C. E.

Hay Fever, A Rational View of the Etiology Of.—GEO. J. BEST, M.D. (Englewood, N. J.).—*The N. A. Jour. of Homeopathy*, Feb. 1902.

An extended argument tending to confirm the author's theory that hay fever is the result of drug toxemia from the diffused emanations of certain plants, in individuals in some way predisposed.

F. C. E.

SELECTED ABSTRACTS.

Reduction of Nasal Obstruction with London Paste.—A. C. ROGERS (Los Angeles).—*South. Calif. Practit.*, Feb., 1902.

The article commences by a caution that London paste is not adapted to all conditions, but it is claimed by the author that it is more easily managed than nitric or chromic acid, and is more energetic than trichloroacetic acid. In using, half a dram of the powder is placed on a glass or porcelain surface and moistened with enough saturated solution of boric acid to render it about the consistency of thick paint. It is spread upon the nasal enlargement about the thickness of paper, and over an area of from the size of a dime to that of a quarter.

Some loose cotton is then inserted in the nose. If violent sneezing follows, the patient is to recline for ten minutes, holding the ends of the fingers firmly on the upper-lip below the nose. On inspection at the end of ten minutes, a dark sunken surface will be found where the white elevation was. This is covered with some protective, such as zinc ointment, and a plug of cotton, and allowed to remain. On the following day considerable swelling will have taken place, and the nose should be carefully cleansed daily until a firm crust is formed. This crust may be removed as soon as its edges can be loosened, but will reform each day. In two or three weeks the tumor will be found shrunken and the paste can be reapplied if necessary.

EATON.

A Case of Progressive Unilateral Atrophy of the Face and Tongue.

—ALICE M. WOODS (San Francisco)—*Occident Med. Times*, Dec., 1901.

Patient was a woman of 38, who sought relief from cramps in the muscles of the right side of her face. She gave a neuropathic history. The twitching and cramps of the muscles began four years ago, and came on irregularly. There is lack of symmetry of the face * * * Within the mouth there is a difference in size in the two sides of both the roof and floor. "The tongue presents a most peculiar appearance, as the right side is reduced to apparently one-half the left side of this organ."

The author remarks that the case is peculiar in that the atrophy is right-sided, as most observers make mention that it is generally on the left side. The initial lesion developed shortly after an infectious fever in youth.

EATON.

Rhino-pharyngitis and Chronic Tonsillitis and their Sequelae in Children.—G. DUPOND.—*Rev. Heb. de Laryng. D'Otol. et de Rhin.* Jan. 25, 1902.

The complications which may result from chronic rhino-pharyngo-tonsillitis may be divided into three categories:

1. Infection of the neighboring parts, such as otitis media, dacryocystitis, keratitis, kerato-conjunctivitis, phlyctenula, multiple adenopathy, peri-pharyngeal abscess, laryngitis, trachitis, recurrent bronchitis and even broncho-pneumonia.

2. Mechanical and reflex complications, deafness due to adenoid vegetations, asthmatic attacks, laryngitis stridulous, nocturnal incontinence of urine, cephalgia, intellectual apathy, pulmonary emphysema and thoracic deformities.

3. Distant complications, general and visceral infection, diphtheria, nephritis and endocarditis, and finally tuberculosis.

When a child is affected with chronic rhino-pharyngitis, we should not neglect the general constitution, and an anti-scorfulous treatment should be followed out. The local treatment, however, is the most important.

This consists of instillations into the nasal fossae of anti-septic oils by means of a Marfois syringe. Pommades may be used instead if the child is too young.

If these means are insufficient, operative measures should be instituted. These consist in removing the tonsils and in curetting the vegetations which obstruct the naso-pharynx.

W. SCHEPPEGRELL.

Rarefying Osteitis in Chronic Empyema of the Ethmoid and Sphenoid Simulating Atrophic Rhinitis.—EMMA E. MUSSON (Philadelphia).—*St. Louis Med. and Surg. Journ.*, Dec., 1901.

The author quotes Hajek's statement that: "Rarefying osteitis is always the result of long-continued deep inflammation of the mucous membrane and the medullary spaces. * * * The result is a disappearance or an excessive thinning of the osseous trabeculae, but at no time is this a carious process * * ." This process of resorption may go on to a complete disappearance of the middle turbinated and the ethmoid cells.

Grunwald's opinion that atrophic rhinitis is always the result of a purulent involvement of the accessory sinuses is contradicted by some writers, who contend that when pus is found in the accessory sinuses when there is atrophic rhinitis, it is always a secondary infection or an extension of the diseased process from the nasal mucous membrane.

The author's clinical experience leads her to believe that we have to deal with two different affections; one a chronic empyema of the accessory sinuses leading to a rarefying osteitis, and thus resorption of bone; the other an atrophic rhinitis; that is, catarrhal inflammation leading to a more or less complete destruction of the muciparous glands and follicles, etc.

Differential diagnosis is at times very difficult, and may not be reached until the patient has been under observation for some time, and yet on the ability to make this diagnosis lies the prognosis of the disease. A permanent, though possibly long-delayed cure can be hoped for in empyema of the accessory sinuses, while only the more distressing features of the case can be alleviated in atrophic rhinitis.

Five of her own cases are related by the author, and the details of diagnosis, symptoms and treatment given.

The article is of more than usual interest and practical value.

EATON.

Two Cases of Laryngeal Paralysis Accompanying Mitral Stenosis.

—SINCLAIR GILLIES (Sydney).—*Australas. Med. Gaz.*, Nov. 20, 1901.

The condition described in the two cases is stated by the author to be extremely uncommon.

The first patient was a single woman aged 30. At the age of 11 she had an attack of subacute rheumatic fever and subsequently three attacks of chorea. Eighteen months before being examined she was attacked with shortness of breath and palpitation. Six months ago abductor paralysis of her left vocal cord was diagnosed. Later she was found to have well marked vocal stenosis.

The question arises, "What connection, if any, is there between her laryngeal and cardiac condition?"

The author thinks that his second case affords a probable solution.

It is that of a man of 40, who had been under treatment for three years for well marked mitral stenosis and regurgitation. He was

found to have complete paralysis of the left cord. A day or two afterwards the patient died suddenly.

On autopsy the pulmonary veins and arteries were injected with plaster of Paris and also the heart and aorta. The left vagus and recurrent laryngeal nerves were sufficiently dissected out to mark their course without altering their relations, the whole heart being enlarged, but especially the left auricle. On tracing the left recurrent laryngeal it was seen to pass between the arch of the aorta and the dilated left branch of the pulmonary artery. Here pressure had occurred, and on tracing the nerve further it was seen that at no other part of its course was there any cause for compression. "The inference is that in both the cases the left cord resulted from compression of the recurrent laryngeal between the aortic arch and a dilated left branch of the pulmonary artery."

EATON.

Observations upon Forty Consecutive Cases of Intubation of the Larynx in Diphtheria.—CONRAD BASAN.—*Lancet*, July 13, 1901.

Intubation of the larynx is by no means a difficult operation, and that it is successful in diphtheritic stenosis the table given below sufficiently demonstrates. Since its introduction into the diphtheria wards of the Eastern Hospital it has been given a fairly extensive trial, and, excluding those cases in which it was contraindicated, intubation was tried before having recourse to tracheotomy. Diphtheria antitoxin was also freely administered, and much of the success in the cases is due to its efficacy. The operation is easy; indeed, the anatomical knowledge possessed by a student, combined with a little manual dexterity that can be acquired by practicing upon the cadaver, is all that is necessary, albeit there are difficulties in the living that cannot be learned otherwise than by experience. But in spite of the patient's temporary struggles, the obliteration of anatomical landmarks through inflammatory swelling, spasm of the glottis, and so on, it is surprising how easy the operation becomes with a little practice. The instruments used at the Eastern Hospital were supplied by Collin of Paris. Compared with the ordinary O'Dwyer's, the tubes are lightly made, shorter, and the fusiform swelling of the body shades off above and below less abruptly. The obturator is jointed as usual, but the upper extremity has a horizontal slit, into which the end of the sliding catch of the introducer fits. This is in every way satisfactory; it locks safely, and is not liable to get out of order.

The results of the forty consecutive cases intubated are set out in the following table :

	Number of Cases.	Rec'd.	Died.
Intubation alone.....	32	28	4
Intubation with subsequent tracheotomy..	8	5	3
	<hr/>	<hr/>	<hr/>
Total.....	40	33	7

The ages ranged from thirteen months to seven years; the youngest recovery was eighteen months. Of the eight tracheotomies after intubation, four patients had membrane in the trachea. Two of these died from broncho-pneumonia; the other death was that of a child with an impermeable fibro-cartilaginous stenosis of the larynx following upon intubation, who succumbed to a relapse of diphtheria some months later. Of the four cases of death after intubation alone, three were hopeless diphtheria cases. Two of these patients died completely relieved of the obstruction, with the tube in the larynx. The other patient developed scarlet fever two days after admission, and, although she had quite recovered from the laryngeal obstruction, a brawny, spreading cellulitis of the neck set in, with otorrhea and broncho-pneumonia, and she died twenty-two days after admission. The post-mortem notes of one of the cases in which the patient died with the tube in the larynx are given.

For intubating the larynx the author always adopts the dorsal decubitus position for the patient. Much valuable time is saved thereby should tracheotomy become necessary, for, indeed, intubation should never be attempted in diphtheria without all the requisites for a cutting operation being close at hand. Nearly all the patients require the introduction of a gag, and the breathing during this process may become severely embarrassed, and even cease, so that instant tracheotomy is necessary. Great care and gentleness must, therefore, be exercised in introducing this instrument; it should be inserted on the left side, away from the operator, it being noted that the tongue has fair play, and that the mouth is not unduly widened. For toothless children the index-finger of the assistant inserted as far back as is convenient between the upper and lower jaw is all that is necessary. For patients who refuse to be gagged a very simple plan is to excite the reflex by passing the index-finger behind the last molar teeth. Any struggling should be controlled without in any way embarrassing the movements of the chest and abdomen, an assistant for this purpose stand-

ing on the right side of the table behind the operator. Severe swelling of the laryngeal mucosa with an ill-defined epiglottis is not uncommon, and may preclude all possibility of intubation; indeed, the propriety of attempting it under these conditions is questionable, as it is naturally so in cases of naso-pharyngeal and faucial swelling, combined with membrane almost occluding the faucial cleft and completely blocking the nares.

The tube may slip into the esophagus; this is very common, and is readily discerned by the absence of relief and the gradual shortening of the silk thread attached to the tube. If the epiglottis is held well forward by the introduced finger this accident is less likely to happen. Spasm of the glottis may be so persistent that the tube will not enter for quite an appreciable space of time, whilst the patient's condition begins to give cause for anxiety. It usually yields, however, providing the manipulation is extremely gentle, when the succeeding inspiratory effort readily allows the tube to slip in; indeed, it is good practice to insert the tube during inspiration, for it is in these cases particularly that damage to the laryngeal mucosa and its ventricular bands is likely to occur unless this possibility of spasm of the glottis be always borne in mind.

Vomiting might be considered a very likely occurrence, but it is surprising that, despite the reflex induced, in reality it rarely occurs. This is possibly due to stronger reflexes being simultaneously called into play. With the tube in situ the breathing generally proceeds satisfactorily, and the relief is immediate. Retraction of the chest, however, may not in some cases entirely disappear. This is frequently due to blood from the fauces (detached membrane) and mucus narrowing the lumen of the tube. The cough generally succeeds in expelling this, and ultimately the relief is complete. Membrane may be pushed down in front of the tube, and be either free or flapping at its tracheal aperture. Tranquil breathing may succeed in spite of this for a few minutes; when, however, coughing set in it failed to expel the membrane, respiration ceased and instant tracheotomy was performed. Relief may not be obtained at all. In some cases this is due to the swollen tissues in which the head of the tube is embedded or to tracheal obstruction. The list of recoveries also contained a case where the tube was enclosed in a laryngeal cast. A patient may progress satisfactorily for a day or two, and the tube then become suddenly blocked with membrane. Unless the tube is instantly expressed or immediate tracheotomy is performed, the child's life may be lost.

But although several such cases have occurred in the list given here, a fatal catastrophe has fortunately been averted. The tube may get dry or partially occluded with tenacious mucus and membranous debris, and if the cough is absent, or, if present, is too weak to expel the secretion, signs of distress naturally make themselves evident. The tube may be coughed up at varying intervals. In some cases the patient progresses satisfactorily without further operative interference, in others the tube may have to be returned almost immediately, whilst there are a few cases in which the larynx is so intolerant that reintubation is impossible and recourse must be had to tracheotomy.

Before discussing the treatment after intubation, the question is raised as to whether the silk thread affixed to the tube should remain. Personally, the author always removes it; its presence is a constant source of irritation and annoyance to the patient, and it necessitates the hands being tied to the bedsides, adding yet another cause for discomfort. Unless passed between the interstices of the teeth, it is very liable to get bitten through. In favor of its retention, however, it certainly affords a means whereby the nurse can readily remove the tube in an emergency; but as nurses can be taught to express the tube successfully, the aforementioned reason loses much of its import.

Although the cases in which membrane was expectorated by the tube are few in number, the author cannot help thinking that in many of the younger children membrane is coughed up and swallowed with the mucus. Despite the fact that intubation may be done in an incredibly short space of time, patients must not be allowed to get too bad; intubation should be performed before tracheotomy becomes justifiable, and should the first attempt be unsuccessful, it is well in many cases to remove the gag, and to allow the patient to recover from the temporary embarrassment. Persistent and prolonged attempts to intubate are wholly unjustifiable, and may induce an irrecoverable collapse of the lung.

With regard to treatment, as early as possible diphtheria antitoxin should be injected, 6,000 or 12,000 units at once, and repeated in twenty-four hours if necessary. Immediately after the tube is inserted, cut the thread above the knot, and before withdrawing it steady the tube with the index-finger of the left hand passed behind the epiglottis. The mouth must now be cleaned out, and it is advisable to let the patient sit up, as the cough is more effectual in this position. See that the breathing is now well estab-

lished before returning the patient to bed. No food should be given by mouth, for intubated patients can rarely swallow with safety. Nasal or rectal feeding is by far the best method; giving nourishment with the foot of the bed raised is at the best tedious and frequently unsatisfactory.

To insure that the laryngeal tube is kept as clear as possible it is most important that the patients should cough well and frequently, and for this reason prolonged sleep is injurious. If the cough is absent, or if present, it is weak and unproductive, sips of water should be administered regularly every two or three hours, day and night, to excite the reflex. The author has found this simple expedient of the greatest service; indeed, considers it an indispensable expedient of the greatest service; indeed, considers it an indispensable part of the treatment. Should the secretion be scanty or tenacious, a mixture containing iodide of potassium, antimonial wine, ipecacuanha wine, and tincture of squills is a great help in restoring its fluidity and ready expulsion. Irrigation of the nose and throat should be suspended as long as the tube remains in the larynx; the mouth, however, may be swabbed out when necessary. How long the tube is to remain in, providing the breathing is satisfactory, is a most difficult question to answer; indeed, there are no indications to guide one as to when to remove it. At the end of three days is a very good time to express it. Expression is readily accomplished thus: The patient sitting upright, extend the neck, and, with the left hand grasping the occiput, and bend the fingers of the same hand round the nape of the neck. Press the thumb backwards and slightly upwards, and at the same time pull the head well forward on to the chest. This rarely fails to dislodge the tube, and there is no danger of it being swallowed. The tube should be carefully examined, and if there is much discoloration and the urgent symptoms return, it is better to perform tracheotomy; otherwise reintubate, and wait another three days. Frequently a little recession returns, but it soon passes off.

The unsuccessful attempts to intubate the larynx are not dealt with in this paper, nor are the cases which were intubated after tracheotomy for the purpose of restoring laryngeal breathing. They were, however, very few in number and they call for no special reference. With antitoxin intubation should hold a place in the treatment of diphtheritic laryngeal stenosis, but, unfortunately, its scope of usefulness is practically limited to hospital practice. A great desideratum in its favor is that it preserves the con-

tinuity of the respiratory tract. The author records his gratitude to Dr. E. W. Goodall for kindly introducing to his notice Dr. Raoul Bayeux's method of "enucleating" (expressing) the tube.

ST. CLAIR THOMSON.

Some Further Cases of Ethyl-Chloride Narcosis. — W. J. MCCARDIE. — *Lancet*, July 20, 1901.

There was recently published in the *Lancet*¹ a paper in which the author gave short notes of some cases of ethyl-chloride narcosis, and he now recounts his experience of some cases in the hope that it may be a help to others who wish to make trial of ethyl chloride as a general anesthetic. One case is of interest, because the patient died about an hour after the administration; another case because of the development of a rash during anesthesia; and yet another case because the accompanying muscular excitement made full anesthesia and operation impossible. The longest operative anesthesia lasted for from sixteen to seventeen minutes, and the result in every way was excellent, although, according to her medical attendant, the patient had had very serious symptoms when he had once before given her chloroform. The administrations for removal of tonsils and adenoids in many of the selected cases gave excellent results. A list of cases is appended.

In all of the adenoid cases, nitrous oxide, failing ethyl chloride, would have been administered, and the operator in most cases found much advantage in ethyl chloride over nitrous oxide, as giving a much longer anesthesia, usually lasting from three-quarters of a minute to two minutes, and causing no congestion, while apparently having a distinctly stimulative action. In the recumbent position, at any rate, the insertion of a mouth-prop before beginning the administration rather hinders free breathing and upsets the patient. It is preferable to place the closed blades of a Mason's gag in the corner of the mouth, and even better to insert the instrument when full anesthesia has been induced. The drug should be given until the pupils are contracted or just beginning to dilate, and till the conjunctiva is insensitive and full muscular relaxation has occurred; then the mouth can be easily opened, and the operation proceeded with. Ethyl chloride has obviously great advantages over gas in these short adenoid operations, where an extra minute or half a minute of anesthesia makes all the difference to absolute success. On the average the author uses between

¹*Lancet*, March 9, 1901, p. 698.

5 and 10 c.c. in these cases, much usually remaining over. It would seem that in many short ear and nose operations ethyl chloride might also be used with great advantage. In ear, nose, and throat work there is apparently no objection to administration in the sitting-up position, a great gain to the operator, in that the usual relative position of surgeon and patient is maintained. In dental work nitrous oxide suffices for very short cases when given in the ordinary way. For slightly longer cases ethyl chloride would be very advantageous, but for the longest cases of all—those, say, lasting for from three minutes to ten minutes—nitrous oxide, given by the Coleman-Paterson method, answer every purpose, since it can be continuously used during operation. Seitz of Constance, a well-known dental surgeon and writer on dental subjects, in a recent work on dental narcosis, strongly recommends ethyl chloride for dental operations instead of nitrous oxide or ether.

If the patient be very strong and very excitable, and especially if he be an alcoholic, and it be attempted to administer ethyl chloride, it is advisable to have both ether and chloroform to hand, as instanced in the case of the patient in Case 12, who showed great muscular and mental excitement. According to Lotheissen, Wiesner, and others, excitement is chiefly shown by alcoholics, but the patient just referred to was an abstemious man.

After-effects have in all the cases been slight or absent altogether.

The author thinks that, contrary to the custom of some administrators who "crowd" on the anesthetic, dosage should be by gradually increasing additions of small quantities of the drug—say, 2 or 3 c.c. at a time—and until anesthesia is attained, and then about the same amount given per minute will generally be enough to maintain narcosis. There is decidedly a disadvantage in pouring out at the first a full dose, pressing the inhaler very firmly on the face, and keeping it on, in spite of crying and struggling, till the patient is under. By this method overdosage may occur, and the patient will not forget the terror and feeling of suffocation during the induction of narcosis.

The case of death after operation, under the influence of ethyl chloride, in no way shakes his present opinion of its value as a narcotic, and he has since then taken every opportunity of trying it for the shorter surgical operations. Finally, ethyl chloride might advantageously be used instead of nitrous oxide mixed with oxygen or nitrous oxide alone for many of the shorter operations, and more especially in the case of less vigorous patients.

ST. CLAIR THOMSON.

BOOK REVIEWS.

Some Thoughts on the Principles of Local Treatment in Diseases of the Upper Air Passages. BY SIR FELIX SEMON, M. D., F. R. C. S.

Being two lectures delivered at the Medical Graduates' College and Polyclinic on October 2nd and October 9th, 1901. With an appendix consisting of two letters published November 23, 1901 and January 11, 1902 in the British Medical Journal. 130 pp. cloth bound. Published by Macmillan & Co., London and New York, 1902. Price 2 sh. 6d.

In a monograph of 130 pages the author presents two lectures delivered last year at the Medical Graduates' College and Polyclinic, to which is added a letter to the editor of the British Medical Journal, expressing his opinion against "Operative Intemperance."

To those of our readers who have carefully followed the spirit of discussion which arose and which appeared in a number of issues of the British Medical Journal from November 16th, 1901, to January 11th, 1902, the reprinting of the lectures in monograph form and the fully expressed opinions of so eminent an authority and careful observer as Sir Felix Semon, will be gratefully received.

It must be admitted that there is still much room for contention, and the warnings of this experienced authority against excessive zeal and too much operating are timely.

M. A. G.

International Medical Annual.—A Year-Book of Treatment and Practitioners' Index. 688 pp., cloth, 25 plates, 14 charts, and 65 illustrations. Publishers, E. B. Treat & Co., 241 W. 23rd St., New York, and 199 Clark St., Chicago. Price \$3.00.

This Year Book adds an additional feature to those of the other *Annals*, in that it is more international in the character of the literature that is reviewed.

The volume contains many excellent recent therapeutic suggestions in Otolology and Laryngology. As this *Annual* is classified by subjects alphabetically, the information of special interest to our readers is scattered throughout the book; in this again, it differs from our American *Annals*, as here Otolology and Nose and Throat diseases are considered in separate paragraphs.

We specially note an excellent paragraph on recent progress in aural surgery, (page 257) in which the evolution of the radical treatment of mastoid abscess and the various operative procedures recommended for its eradication are briefly but carefully considered.

M. A. G.

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ORIGINAL COMMUNICATIONS.

(Original communications are received with the understanding
that they are contributed exclusively to THE LARYNGOSCOPE.)

SYMPOSIUM—ACCESSORY SINUSES.

DISEASES OF THE ACCESSORY SINUSES.*

BY ROBERT C. MYLES, M.D., NEW YORK.

The subject that has been assigned to me is a broad one. I shall treat it in an epitomized manner, giving rather a condensed statement which will chiefly embrace my experience in the treatment of this class of cases. It has been said that nothing is so unreliable as statistics, except some men who make them; nevertheless, statistical evidence is an invaluable aid to a discriminating mind and should be given preference over assertions.

The principal physiologic function of the nasal accessory cavities is to supply fluid secretion and warm air to the nose and to aid the sounding board apparatus of the head. The usual causes of diseases of the pneumatic sinuses are to be found in bacterial activity, either primary or secondary to mechanical conditions, generally the latter the acute infectious diseases being the greatest offender, the so-called polypoid changes second, and the pathologic changes at the root ends of the teeth, third. When we shall have perfected the art of preventative medicine, we will hear less of accessory sinus diseases; our duties will direct us to restore the nares to as near a physiologic condition as our science will permit without injuring, permanently, the structure of the nose. Serious conferences with dentists will greatly reduce our incomes from the antrums. Proper nursing and intelligent interference at the crucial time will considerably reduce the number of chronic cases. The

*Read before the Eighth Annual Meeting of the American Laryngological, Rhinological and Otological Society, Washington, D. C., June 2nd to 4th, 1902.

pathologic changes vary from venous intumescence to many necrotic and formative conditions.

The diagnosis, prognosis and treatment will be considered under the individual sections. In the majority of cases of empyema of the antrum of Highmore the diagnosis is easily made. The introduction through the hiatus semilunaris of the properly curved silver irrigation-tube has enabled the writer, in the majority of cases, to settle the diagnosis at once. After using the electric light and listening to the arguments of others concerning its worthlessness, he retains and uses it as one of his valuable aids in making the diagnosis. It is not the pus which prevents the transillumination, but the swollen tissues and the blood within them. Pus in the middle meatus issues from the antrum, the anterior ethmoidal cells, or the frontal sinus, or from all of them. Placing the top of the patient's head on the floor, and at the same time requiring him to blow forcibly through the suspected nostril, will demonstrate a quantity of pus in the middle meatus in many cases in which the antrum is at fault, and in which the secretion is more or less liquid. The passing of a trochar through the middle or inferior meatus will confirm the diagnosis in suspected cases in which it cannot be made by the previously mentioned methods.

But there is one class of cases in which the method will fail—those in which there are polyps, thick mucus and colloid material. The prognosis in antrum diseases depends upon the extent and location of the pathologic changes as well as on the method of procedure adopted by the surgeon. Since it is not possible for the surgeon to anticipate the exact diseased condition before operating, nor always possible for him to determine the extent of the disease when operating, failure to obtain the best results in every case must necessarily occur. Some of the apparently worst forms of antral empyema have been cured by the extraction of a tooth and a few weeks' irrigation through the socket. On the other hand, the writer has seen cases of trivial discharge, the only symptoms being a moderate post-nasal catarrh, which, after a thoroughly radical operation, consisting of the removal of the anterior inferior wall of the antrum, thorough curettage of the internal walls, and gauze packing for weeks, have terminated in the most obstinate purulent and insubordinate pyogenic conditions. Since we cannot obliterate the antrum without objectionable results, we must try to restore its functions without destroying too much of the lining membrane. The writer believes that he was the first

to insist upon not treating the antrum according to thorough surgical principles; in other words, he believes that the thorough curettage frequently induces a worse condition than the disease for which it is employed. It is his rule, in cases of long history and severe disease manifestations, to make large openings through the region of the canine fossa and malar ridge and counter-openings through the inferior or middle meatus, followed by a gentle and careful curettage of the mucosa and a firm and decided curettage of whatever bare bone may be found. The cavity is then packed with aristol or iodoform gauze, which has been passed through mercuric bichlorid solution. This packing is never allowed to remain longer than a week. At the expiration of this time the mucous membrane is inspected occasionally, the exuberant granulations are removed with the curette, and the cardinal principles of free drainage and free admission of air are utilized as far as the conditions of the individual case will permit, supplemented by various forms of tubing and re-incisions of the membrane as it closes over the aperture. The writer, from time to time, has had patients who apparently were cured by treatment through the natural opening, but these evidently were cases in which purulent semi-decayed collections had formed and acted as a leaven to perpetuate the suppurating foci.

In frontal sinus cases the diagnosis at times is extremely difficult, but, as a rule, the silver irrigation tube can be inserted into the sinus and an injection of normal salt solution makes the diagnosis clear by bringing away a quantity of purulent matter. In the severer types of these cases the headaches which come on in the morning and pass off in the afternoon are almost pathognomonic. This headache may be explained by the fact that the gas, which, during the night, escapes through the infundibulum, ceases to do so when the patient assumes the upright position, and gravity fills the infundibulum with muco-purulent matter. By the afternoon the pressure of the gas has forced the muco-pus through the naso-frontal canal or infundibulum, when the gas escapes and the headache ceases.

The writer has been accustomed to employ three methods of treatment. The first consists of the total obliteration of the sinus, either by removing the anterior or inferior frontal sinus-wall and every vestige of the mucous membrane of the sinuses, the cavity then being packed with gauze. This method succeeds brilliantly in cases of small sinuses, but in those patients in whom the sinuses

are large and extend outward and backward above the orbital cavity, the treatment is slow, tedious and unsatisfactory. The second method is utilized in cases of large sinuses. Part of the anterior wall is removed, careful curetting of the mucosa and bare bone is employed, and as large an opening as is feasible is made from the sinus to the nose with an especially constructed trephine and chisel. Special efforts are made to remove those portions of the nasal process of the superior maxillary bone which form a part of the floor of the frontal sinus. It has been the custom of the writer to endeavor to relieve all severe forms of acute and chronic frontal sinusitis by removing the anterior end of the middle turbinal, and a part of the anterior ethmoidal cells, as well as the lower walls of the naso-frontal canal and infundibulum. This was formerly done as a preliminary step in cases in which external operation was intended, but so many cures resulted from this procedure that he now employs it as the first step in the treatment, with the hope of effecting a cure through this avenue; if this fails, it makes the external operation easier and more effective.

The diagnosis of ethmoidal-cell disease is usually so easily made that "He who runs may read." In cases of latent empyema in the individual cells, the diagnosis is frequently not made until the patient has been under observation for some time. The writer has found the soft silver probe invaluable in ascertaining the conditions of the respective cells. In nearly every case it is wiser to remove a part or all of the middle turbinal at the outset. In the polypoid cases all visible polypoid tissue has been taken away with the excisor forceps or snare, and the floors of the sinuses removed with especially constructed guarded trephines, and with the author's lateral and antero-posterior cutting forceps. His malleable-handled curettes have proved most serviceable in removing the intra- and intercellular diseased tissue and walls. The securing of free drainage and the free admission of air hold as cardinal principles here as well as in the antrum.

Diseases of the sphenoidal cells, in the writer's experience, have been the most easily diagnosed. The treatment and technique employed have been more satisfactory, and results better than those obtained in the treatment of the other sinuses. Pus issuing from the uppermost region at which the septum joins the sphenoidal bone, and careful probing, will indicate the direction from whence it comes. Complete removal of the posterior end of the middle turbinal will usually demonstrate the point whence the pus makes its exit. The upper anterior wall should be penetrated with a guarded awl or an obtuse-angled curette. Extensive removal of the anterior wall with cutting forceps, gentle curettage, irrigation and repeated excisions of the membrane which forms over the openings, have cured for the writer the most obstinate and apparently hopelessly diseased conditions of the sphenoidal sinuses.

DISEASES OF THE ETHMOIDAL CELLS.*

BY EUGENE L. VANSANT, M.D., PHILADELPHIA.

The ethmoidal cells, or sinuses, from their anatomical position, are not only very liable to disease, particularly of septic or inflammatory nature; but, being situated, as they are, so close to the ostia or openings of the other nasal, accessory sinuses, it is almost impossible for them to be diseased, without affecting the other sinuses; or, indeed, for the other sinuses to be diseased, and to have the ethmoidal sinuses escape.

The following is a brief resume of some of the more important of the anatomical features of the ethmoidal sinuses. These cells, or sinuses, consist of a number of thin walled, cellular cavities, lying within the lateral masses of the ethmoidal bone. They vary greatly in number, size, and shape. Most anatomists divide them into anterior and posterior cells. This separation into two groups is made by taking the attachment of the middle turbinate bone as a line of division. All those cells communicating with the middle meatus of the nose, are called anterior, ethmoidal cells; while those communicating with the superior meatus are called posterior, ethmoidal cells. In the disarticulated skull, many of these cells appear to be broken; but when the bones are properly articulated, they form perfect cavities. Those on the upper surface are closed in, when articulated, by the depressions, or foveae, of the ethmoidal edge of the orbital plate of the frontal bone. Those situated anteriorly are closed in by the lachrymal bone, and the nasal process of the superior maxillary, while inferiorly, articulation into the ethmoidal edge of the orbital plate of the superior maxillary, and posteriorly, with the lateral mass of the sphenoidal, spongy bones, and the orbital process of the palate, complete the cellular structure.

The anterior cells, may greatly predominate over the posterior cells, and reach far backwards; or the opposite condition may prevail, and the posterior cells reach far forward.

The number in each group varies greatly, although there are generally more of the anterior, than of the posterior cells. The anterior cells usually communicate with the middle meatus by several ostia.

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Some of these ostia open into the infundibulum, on its outer and posterior aspect. These are sometimes spoken of as "infundibular cells." Others communicate directly with the middle meatus, and open into the groove of the semilunar hiatus, below the line of origin of the middle, turbinated bone.

The posterior cells frequently have but one ostium, although there may be two or more. The posterior openings are usually larger than those of the anterior cells. They communicate with the superior meatus, above the middle turbinated bone, and lie deeply, being concealed by the overhanging edge of the superior turbinate body.

Occasionally, an additional ostium is found in the incisura ethmoidalis superior. This is usually found when a so-called sphenothmoidal cell is present. Particular attention should be directed to certain ethmoidal cells that at times are found lying very close to the other accessory sinuses. Thus, occasionally, the roof of the maxillary antrum contains one or more air cells, which in the articulated skull, complete certain of the ethmoidal cells. These have been called "maxillo-ethmoidal cells." Again, we may find an upward and forward development of ethmoidal cells towards the cavity of the frontal sinus, making a distinct prominence on the floor of that sinus, to which prominence the name of bulla frontales (Lathrop) has been applied. These cells that protrude thus forward and are situated close to the floor of the frontal sinus, are known as the "fronto ethmoidal cells."

Situated in the hiatus semilunaris is a rounded bony prominence named by Zuckerlandl, "the Ethmoidal bulla." Its size varies, and greatly influences the width of the semilunar hiatus. It contains one or more ethmoidal cells, which communicate directly with the middle meatus by an ostium, on its superior aspect. From the position of its ostium, drainage from the interior of the ethmoidal bulla is necessarily imperfect.

Again, we may find a posterior ethmoidal cell projecting backward into the body and lesser wing of the sphenoid bone, encroaching upon a region of the sphenoid sinus. These cells are called sphenothmoidal cells. From their intimate relation, it may be readily seen, how diseases, affecting these maxillo-ethmoidal, fronto-ethmoidal, or sphenothmoidal cells, would soon affect the cavities to which they are so closely joined.

The ethmoidal cells are lined by a thin muco-periosteal membrane, containing mucous glands and covered by a layer of ciliated

epithelium. The intermediate position of the ethmoidal cells—being posteriorly in close contact with the sphenoidal, and anteriorly with the frontal sinus—the opening of the anterior cells being so close to the frontal and antral ostia, and the upper antral wall being so largely composed of the ethmoid bone, all render them very liable to extension of diseases from, and to, the other sinuses.

Moreover, the situation of the ethmoidal cells, and the fact of their multiplicity, make them particularly liable to extension of, septic or inflammatory diseases from the nasal chambers, and to occlusion of their ostia, by local turgescence, growths, or foreign bodies.

The ethmoidal cells may be affected by a local expression of certain specific inflammations, (syphilis, tuberculosis, etc.) When this is the case, appropriate local treatment is no less necessary, such as applications to ulcerations, removal of necrotic bone, etc., but the main reliance must be upon remedial measures directed to the general disease.

The ethmoidal cells may be the seat of new growths. Of these, myxomata, are the more commonly found. Cases of fibromata, sarcomata, and carcinomata, have been reported. The treatment consists, whenever possible, of the thorough removal of the growth. It occasionally occurs that a malignant growth from the cells is mistaken for a polyp. One instance occurred in a case in a town near Philadelphia, in which the physician in charge removed part of a sarcoma, under the impression that he was removing a polypus. Uncontrollable hemorrhage followed, and two days later the patient was brought to me in Philadelphia. At that time he was nearly ex-sanguine, and fainted while being examined; but anterior and posterior nasal plugs, hypodermoclyses of large quantities of normal salt solution, with rest and appropriate general treatment, revived him, only, however, to be followed, by a fatal result about two weeks later owing to the rapid growth of the tumor, involving the frontal sinus and orbit, with metastases to the brain. It is very probable that the inflammation produced by the operation, and the lessened vital resistance of the patient, from the hemorrhage, had caused the rapid extension of the growth.

Catarrhal and suppurative inflammation of the ethmoidal cells are the conditions that most frequently demand our attention. These are very prevalent, and frequently exist unsuspected. There is no doubt that many cases of acute and chronic rhinitis, of purulent rhinitis in children, and of atrophic rhinitis, are accompanied and

sustained by associated lesions of the ethmoidal sinuses. Again as previously pointed out, it is unusual to have an inflammation continue long in the neighboring accessory sinuses, without involvement of the ethmoidal cells.

Catarrhal inflammation of the ethmoidal cells is usually associated with an acute rhinitis. More rarely, it occurs during the course of certain infectious diseases, such as measles, scarlet fever, typhoid fever, pneumonia, diphtheria, etc. Influenza is a very frequent cause.

In acute catarrhal inflammation, the mucosa is reddened, swollen and congested, being infiltrated with round cells, and is accompanied by a profuse, serous exudation. This condition may soon subside and be followed by resolution; or continuing, may become chronic, and later take on a suppurative condition. The clinical symptoms are ill-defined, consisting mainly in a greater severity of pain and discomfort, than usually accompanies a rhinitis. At times, careful examination will reveal a catarrhal discharge proceeding directly from the cells. Should the ostia of the cells become obstructed, and the exudation be retained under tension—the symptoms are greatly aggravated; and deep-seated pains may be felt over the root of the nose, or be referred to the posterior region of the orbit. If the posterior cells are involved, the patient is apt to refer the pain also to the temporal region. Acute catarrhal inflammation of the ethmoidal cells usually ends in resolution. Treatment is directed to the nasal inflammation present—rest; purgation; application of hot water over the nose and face; and cleansing of the nose with warm alkaline washes, gives much relief. When associated with an acute rhinitis, I have seen good results from the internal exhibition of the following prescription:

Acetanilid, gr. ii.

Compound Morphia Powder, gr. i.

Bromide of Soda, grs. v.

Given every hour until 4 or 6 doses are taken. Should the secretions be retained, within the cells, efforts should be made to promote drainage by opening their ostia; or, if the distension be great, free incisions should be made.

If the catarrhal inflammation takes on a chronic form, it is apt to become suppurative, through secondary bacterial infection.

Suppurative inflammation of the ethmoidal cells may be acute or chronic, and either condition can be further modified by obstruction of the ostia, leading to confinement of the secretion within the cells.

Acute suppurative ethmoiditis presents the same general etiology as the acute, catarrhal inflammation of the cells. Influenza, of late years, has been a very frequent cause. The infecting agent being of the mixed character. Traumatism and operative procedures in the nasal chambers may at times be followed by acute supuration of the ethmoidal cells. The symptoms and treatment are about the same, as for the acute catarrhal variety. The pain, however, is apt to be more severe, and, if the pus is confined, early incision is imperative in order to prevent the invasion of the neighboring cavities.

Most cases of suppurative ethmoiditis, however, present themselves when the condition is already a chronic one. Chronic suppurative ethmoiditis, as already stated, may be the sequence of a previous simple catarrhal condition that has become infected with pus organisms. Obstruction of the nasal chambers, from growths, deflection of the nasal septum, or other morbid intra-nasal conditions, by causing a chronic congestion of the lining mucosa, and retaining secretions, are very frequent causes. The abnormal width in the unobstructed nostril, in cases of nasal septal deflection, and in atrophic rhinitis, particularly exposes the ethmoidal cells of the corresponding side, and leads to chronic suppuration within them. Syphilis, especially in the tertiary stage, scrofula, and tuberculosis, are important factors in the causation of chronic purulent ethmoiditis. Foreign bodies in the nose are also a cause.

In chronic suppuration, the mucous membrane lining the sinuses, becomes thickened, frequently presenting a boggy, swollen and gelatinous appearance. Granulations, and soft polypoid processes, not infrequently spring up from the mucous membrane. This swelling of the membrane may effectively block the openings of the sinuses. Later the bony partitions between the cells necrose, and come away mixed with the secretion in delicate particles.

SYMPTOMS.

Quite a number of cases of purulent ethmoiditis, show but few symptoms, except a slight chronic, nasal discharge. Such cases have been spoken of as "latent empyemas."

Usually, in addition to the discharge, the patient complains of more or less constant pain, which is usually referred to the forehead or post-region of the orbit, or to the temporal region. Not infrequently, a diffuse, dull, heavy feeling in the head is complained of. The pain is greatly increased by retention of the secretion, un-

der pressure. It is the writer's opinion, that although complete retention, in cases of suppurative ethmoiditis, (the so-called closed empyema), is comparatively rare. Still, a partial retention of the secretions is almost always present. The ostia of the cells are not well placed for constant drainage, and many cases are complicated by intra-nasal obstructions, that also may prevent good drainage from the cells. The nasal discharge is usually of a tenacious, muco-purulent character, with a creamy white appearance, but it may vary, at times being more mucoid, at times more purulent. An intercurrent rhinitis, will frequently increase the discharge, and cause it to become more purulent. An offensive odor to the discharge may be present, and this odor may be perceptible to the patient. The disease usually is unilateral, but both sides may be affected. The discharge, especially from the posterior cells, has a tendency to flow back into the naso-pharynx, and causes cough, hawking, dryness of the throat, and huskiness of the voice. Being swallowed, it leads to digestive disturbances, and may even cause a slight, chronic, septic condition of the patient. The senses of smell and taste are frequently disturbed; being greatly lessened, and, at times, absent. Rarely, the patient complains of a peculiar taste to everything he eats.

Not infrequently the patient's spirits and intellectuality are affected. Mental depression, inability to sustain prolonged mental application, or to study, may be noticed.

When retention of the pus continues, pressure symptoms, in various directions from the cells, may be present. Ocular derangement, with pressure symptoms of the orbit, and its contents, are frequently noticed. Optic neuritis, is not uncommon. The patient, in cases of this character, suffers from intense pain. The abscess may evacuate itself in various directions, emptying usually into the nasal chamber, or one of the other accessory sinuses. At times, it opens in the orbit, particularly at the inner angle, and we do not forget, that it may empty into the *anterior fossa* of the skull.

The diagnosis of chronic suppurative ethmoiditis, is greatly aided by inspection, leading to the determination of the existence of a nasal discharge, and its origin in the cells. At times, the removal of intra-nasal obstructions, or of the anterior end of the middle turbinal, greatly aids in the examination, and indeed may be indispensable. Careful probing may release pent-up secretion or reveal diseased bone, and by means of an air-douche, the secretion may be

blown out of the cells. The frequency of involvement of the other nasal sinuses, must also be taken into consideration.

The examination is greatly aided by shrinking the nasal mucosa by topical applications of solutions of cocaine, and adrenalin-chloride. The situation of the ostia should be remembered; and, if the posterior cells are involved, we can best determine that fact by posterior rhinoscopy.

Transillumination is not of much value in the diagnosis. In the severe cases, the retention of pus, the pressure symptoms would greatly aid the diagnosis. The prognosis of chronic, purulent ethmoiditis, is uncertain, and depends greatly upon how carefully treatment is carried out.

In the treatment of chronic suppurative ethmoiditis, thorough drainage of the cells, removal of the purulent secretion, and the diseased portions of the cells, are the essential points. All intra-nasal obstructions to discharge from the cells, should be removed. The frequent association of nasal polyps with this disease, demands careful examination for their detection, and their thorough removal. In the great majority of cases, it is best to remove the anterior end of the middle turbinate; if the posterior cells are involved, the entire middle turbinate should be removed. The author's method of removing the anterior portion of the middle turbinate, is to cut through the bone, close to its attachment, with a powerful pair of scissors, or such forceps as the Grunwalds, nasal forceps, and then with the cold wire snare, remove the entire anterior portion. Application of solutions of cocaine, and adrenalin chloride, greatly facilitates this procedure. After removal of all nasal obstructions, and the necessary part of the middle turbinate, the cells should be examined, and if found necrotic, or filled with granulations, thorough curettement should be done. For this purpose, a ring knife or the Myles or Bryans curette, or the Gunwalds' forceps, may be recommended.

In order to check the bleeding, and to prevent secondary hemorrhage, it is well to lightly pack the part after the operation, with small strips of gauze or cotton. These may, if necessary, be saturated with styptic solutions.

Syringing the cells with a current of hot air is very advantageous, by removing secretions from the cells, and lessening the congestion of the lining membrane. The author's hot-air syringe is well adapted for this purpose. A plan of treatment that has given the writer a number of favorable results, is to remove any nasal ob-

struction as well as the anterior portion of the middle turbinate. Then, later, when the site of the operations is healed, to continue the treatment by syringing the cells with hot-air, and by means of a Blake's inner ear syringe, to inject antiseptic solutions into them. Of such solutions, a five per cent water solution of protagol, and 10 per cent to 20 per cent solutions of ichthyol may be recommended.

The patient should frequently douche the nose with a warm, mild, anti-septic solution, to remove all secretions, and promote drainage.

Hot-water applications, over the root of the nose and face, also seem to be of benefit, and they certainly give much comfort to the patient.

The patient's general condition should be looked after. All digestive disturbance, constipation, etc., should be corrected. Should syphilis or gout be present, appropriate general treatment is necessary.

In a number of cases, after establishing drainage, etc., I have found a change of air very beneficial to the patient, such as a prolonged stay at the seashore, or in the mountains.

In those severe cases, associated with orbital abscess, or where a fistula has been formed, an external cutting operation is usually required. The fistula should be enlarged, and the diseased ethmoidal cells opened.

If found necessary, the ethmoidal labyrinth may be opened, by prolonging the usual external incision, made in opening the frontal sinus, downward, toward the inner canthus of the eye. The periosteum, along with the soft parts, should be raised, and the inner wall of the orbit exposed. The communication into the cells, sought for, and a free passage should be established into the nasal chambers.

The possibility of involvement of the other sinuses, in the suppurative process, should be borne in mind, and if present, appropriate operative measures should be taken, in order to prevent re-infection of the ethmoidal cells, and make the relief permanent.

THE SPHENOIDAL SINUS.*

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The first evidence that I could find on record of any disease of the sphenoidal sinus was that of Rouge, who in 1872, discovered in an autopsy that this cavity contained pus. The first to diagnose suppuration in this cavity in the living was Schaeffer, who in 1885, diagnosed and operated upon this condition. In the last seventeen years, sphenoidal sinusitis has been more and more frequently recognized, but even at the present time we feel that rhinologists have not yet learned to recognize all of the cases occurring in patients whom they are treating for various other diseases. The deep situation of this sinus, the impossibility of seeing its ostium either through the nose or through the naso-pharynx, and the frequent association of suppuration in the other accessory sinuses make it extremely difficult to make this diagnosis.

Before considering affections of this sinus, I wish to call your attention merely to a few points in its anatomy. The cavity varies considerably in size and in the thickness of its walls. Its superior wall separating it from the cranial cavity, is usually less than one millimeter in thickness. Above it lie the optic nerve, ophthalmic artery and third cranial nerve. Its inferior wall is usually much thicker, especially at the posterior portion. The lateral walls vary considerably in thickness, and along them pass important structures, involvement of which in diseases of this sinus, produce many of the symptoms and signs which are indications of disease of this sinus. The fourth nerve, the ophthalmic vein, the internal carotid artery, the superior maxillary division of the fifth nerve all pass in close proximity to this wall. The anterior wall is closed by the lamellae which complete the posterior ethmoidal cells. The ostium is situated high up above the middle turbinate and at a varying distance above the floor of the sinus. It is usually near the

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median line. The cavity is divided antero-posteriorly by a septum vertically placed.

CAUSES.

The causes of sphenoidal sinus diseases are usually the result of extension of inflammation affecting the nasal mucous membrane. Probably influenza, or at any rate severe acute rhinitises are responsible for the majority of these inflammations. There have also been cases reported as following scarlet fever, pneumonia, measles, erysipelas, typhoid fever and syphilis.

ACUTE INFLAMMATION—SYMPTOMS.

Acute inflammation of the sphenoidal sinus is accompanied by fever, occasionally rigors, dizziness and headache, which may be general, if very severe, or referred to the occipital region, the frontal region or at times to the vertex. In some cases, pain situated at the back part of the orbit, may be the only symptom complained of. An examination of the nasal cavity in these cases is apt to reveal the mucous membrane enormously swollen and congested, so that no view of the superior meatus can be obtained even after thoroughly spraying the nose with cocain and adrenalin. Examination of the naso-pharynx will probably show the presence of a thick tenacious mucus issuing from the posterior nares and perhaps extending along the posterior wall of this cavity. We have never been able in acute cases, even after the most thorough contraction of the nasal mucous membrane, to get a view through the nose of pus issuing from the normal opening of the sphenoidal sinus. We are always even in doubt in such cases as to whether the sphenoidal sinus is involved, or whether these same symptoms may not be due to involvement of the posterior ethmoidal cells. We know of no way of differentiating between these two acute conditions, except by removing the middle turbinate and puncturing and washing out the sphenoidal sinus. Unless the symptoms are very grave, we think such a procedure unwarranted. The treatment of the suspected acute suppuration which we adopt is that of keeping the nasal mucous membrane thoroughly contracted with cocain and adrenalin, q. 2 hr. if necessary, and subsequently the nose irrigated with very hot normal saline solutions. If this

according to the gravity of the symptoms, feel justified in the more radical operation, as described later on.

CHRONIC SUPPURATION OF THE SPHENOIDAL SINUS.

The subjective symptoms of this condition are a discharge of pus or the presence of thick crusts appearing in the naso-pharynx. Fetor may or may not be present, and if present may only intermittently be observed. At times the patient is aware of this fetor when it is not noticeable to the physician or those with whom the patient comes in contact. Neuralgia sometimes referred to the supra-orbital region and at others referred to the infra-orbital, at other times to the occipital region of the head may be complained of. When the discharge is intermittent they frequently notice a marked relief in the pain for a few hours or a day after the escape of a large amount of discharge into the naso-pharynx. I think I may lay it down as an almost invariable rule that a patient who has been operated on for suppuration of any of the accessory sinuses and who has good drainage in consequence from that cavity, but who still complains of pain or neuralgia will be found to have some other cells or sinus involved. Optic neuritis has been observed from the pressure of the expanding cavity upon the optic nerve. Meningitis or symptoms of meningeal irritation sometimes have been the first evidence of any involvement of this sinus. Examination of the anterior portion of the nose when this sinus alone is involved, may not show any trace of pus, or there may be a small amount of pus visible above the middle turbinate and between it and the septum. In only one case in which there was marked atrophy of the middle turbinate have we been able to see without previous operative interference the ostium of the sphenoid sinus. Examination of the naso-pharynx usually shows pus issuing from the posterior nares, or dry greenish-brown crusts at the vault of the naso-pharynx. It has been our misfortune to frequently overlook diseases of this sinus owing to the fact that at the time of the visit of the patient to our office there has been no evidence of pus anywhere in the nose or naso-pharynx, the discharge being intermittent, and perhaps the patient has used a spray or douche or removed by hawking all evidences of discharge from the posterior nares and naso-pharynx. After several visits, the finding of this secretion has directed our attention to this sinus. Where we have good reason to suspect sphenoidal sinusitis, we thoroughly cocaineize the nose and attempt to pass a probe between

the middle turbinate and septum, until the probe can be seen to enter the vault of the naso-pharynx by means of the rhinoscopic mirror. We then withdraw the probe 1-16 of an inch, inclining its tip slightly more upwards, and push it forward a distance of $\frac{1}{4}$ of an inch, thereby seeking to enter the natural opening of the sphenoidal sinus or with the use of very little force to push the probe through the wall of the diseased sinus into its cavity. It will be found that the probe has penetrated the nasal cavity on the average about seven centimeters at the time of its entrance into the sphenoid sinus. This measurement is taken from the lower border of the introitus nasi. We know that we are within the sinus by being able to freely push the probe forward a distance of one to one and a half centimeters farther. To make sure that the distal end of the probe is in the sinus and has not slipped below the border of the sphenoid body, we have only to try to depress the distal end of the probe. If this is impossible we know we are in the sinus. Again, inspection of the naso-pharynx by the rhinoscopic mirror will detect the probe if situated in the naso-pharynx. The patient's sensation of the probe in the naso-pharynx may also usually be relied upon.

Deviations of the septum, thickenings of the septum, spurs of the septum, a greatly enlarged middle turbinate, polypi, atresias resulting from previous operations and congenitally narrow nasal cavities render the employment of the probe difficult and often impossible without first correcting the intranasal defects.

Having entered the sinus with a probe we in a similar way pass a canula into the cavity, and irrigate the sinus with warm sterile normal saline solution. The patient's head is inclined forward and he is directed to expectorate into a pus-basin, the solution as it returns from the mouth and sometimes also from the nose. This if pus-laden completes our diagnosis.

We next take a Bryan's gouge and curette and break down the anterior wall of the sinus below the ostium. If care be taken to keep the curette down and inward no danger of perforating the sinus and entering the brain exists. The granulations within the cavity may be removed with this curette or a medium sized Myles' ring curette. Great care must be exercised in curetting the superior and external walls of the cavity on account of the thinness of the bony walls at these points. I must confess that in all my exploring of and operating upon the sphenoid sinus I feel most anxious for two or three days, always realizing that a sudden

movement of the patient's head or a slight deviation from the proper direction of the probe or curette, or an abnormality in the size and position of the sinus may lead to perforation of the bony wall and an infection of the meninges or brain which may prove fatal.

It frequently happens that probing and catheterization can not be accomplished without first removing part or even all of the middle turbinate. This we do under cocain and adrenalin with snare, scissors, forceps or spoke shave, using one or all before accomplishing our purpose.

The subsequent treatment consists in daily washings of the sinus with normal saline solution. We have found that some of our cases can be taught to pass a canula and irrigate the sinus themselves.

We are aware that three other methods have been advocated for entering the sphenoidal sinus.

1. Opening through the floor via the naso-pharynx.
 2. Opening through the antrum, breaking down the posterior ethmoidal cells and thus reaching the sphenoid sinus.
 3. Opening through the frontal sinus and posterior ethmoidal cells to the sphenoid. While we have frequently practiced these operations upon the cadaver, we have not clinically met with a case which we have felt could be better operated on by one of these routes in preference to the nasal route. My impression is that by the latter two routes, with a patient under an anesthetic, and the hemorrhage from diseased cells very profuse the danger of entering the cranial cavity with its probable disastrous results would be greater than that by the nasal route.
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EMPYEMA OF THE ANTRUM.*

BY C. M. COBB, M.D., BOSTON, MASS.

The necessity of the antral cavity renders it an easier subject, both for diagnosis and treatment, than are the other accessory cavities.

It is the only one in which external factors, such as teeth and foreign bodies, introduced whether by man or nature, play a prominent part. For clinical purposes we may divide the causes of suppuration in the antrum into first empyema, secondary to frontal or ethmoid disease; secondly, empyema due to decayed condition of the teeth; third, suppuration due to foreign bodies, as rubber injected by dentists through a tooth root communicating with the antrum; fourth, empyemata due to obstruction of the antral orifice by polypi, new growth or swelling of the middle turbinated bone; fifth, suppuration resulting from tumors, malignant or otherwise, of the antrum; sixth, empyema due to syphilis and resulting in necrosis generally of some portion of the antral wall.

1. It has been proven anatomically that fluid injected into the frontal sinus may pass into the antrum in certain positions of the head. Clinically, cases of antral disease long treated by washing out the antrum without success have been cured by treatment of the frontal or ethmoid region without any treatment directed to the antrum itself, proving that the antrum may be a reservoir for the pus of other sinuses.

2. Diseased teeth should be examined with heat and cold to ascertain whether the roots are alive or dead. If dead, they should be removed if useless, but if necessary for dental purposes, such as crown-work, bridges, etc., the roots of suspicious teeth should be opened, cleaned and refilled. Especially is this important as regards the first and second molars, and the second bicuspid of the side affected. The apparent absence of teeth does not preclude empyema due to roots, since x-ray photography has revealed a root otherwise invisible and the cause of empyema. After removal of a diseased tooth, all its roots should be examined by

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the physician to assure himself that nothing has been broken off and allowed to remain in the jaw to keep up the disease.

Foreign Bodies.—Supernumerary teeth have been found in the jaw causing suppuration, both externally into the mouth and internally into the antrum. They may be diagnosed by the probe as hard bodies lying free in the sinus connecting with the mouth. Hard rubber softened by heat and injected through the tooth root into the antrum in the attempt to fill a cavity has also been found to be a cause of empyema.

5. Suppuration caused by obstruction of the opening of the antrum is usually of the acute variety.

5a. Empyema may be caused by new growths in the sinus and the diagnosis will rest on the appearance of some prolongation into the nose or on the softening of the antral wall by absorption of bone, which seldom occurs in simple empyema.

6. Syphilitic empyema frequently occurs and is most commonly diagnosed by the odor and the softening of bone, and its appearance in the nasal discharge. This rarely occurs in new growths, since the bone is more likely to be absorbed than exfoliated. The reaction of such cases to anti-syphilitic treatment is also marked.

Diagnosis.—Clinically, dental empyema is most likely to be confounded with facial swellings due to inflamed teeth and more especially with dentigenous cysts.

Especially in dentigenous cysts is this the case, since in these cases a probe passed in disappears in the region of the antrum two or more inches. Even among dentists I have found this disease frequently confounded with antral empyema. The walls of a dentigenous cyst are bony and offer the same resistance to the probe as do the walls of the antrum. They often occur in the anterior wall of the antrum, so that the direction of the probe on entering a tooth socket is the same. But both in acute swellings over the antrum and in dentigenous cysts, there is no unilateral nasal discharge, and if water be injected into the tooth socket in the case of cysts, it does not pass out through the nose.

If we have a pus discharge from one nostril and are in doubt as to the sinus from which it comes, we have to depend on observation of the source of pus by the eye, and the use of the probe to detect bare or necrosed bone in ethmoid or frontal regions. If, on tapping and washing out the antrum, we get a flow of pus within an hour or so, we may conclude that it comes from some source outside of the antrum.

Treatment.—if assured that chronic antral empyema, uncomplicated with that of other cavities, is present, we should consider all points given in the etiology very carefully before proceeding to operation. If no cause has been discovered we may proceed to open the antrum in any one of several ways. The operation of Lathrop for removal of the bony nasal wall of the antrum below the lower turbinate and so throwing open the cavity of the antrum into the nostril is probably the best of the kind hitherto suggested. All radical operations in the lower meatus are, however, open to the objection that the operator cannot view the interior of the antrum in order to remove any offending tooth or foreign body which may lurk there. The radical operation, which seems on the whole most satisfactory to the writer, is the Caldwell-Spicer, or some modification of it. This operation consists in making a wide opening into the canine fossa, leaving a flap, which may be stitched up afterwards. The antrum is then thoroughly curetted, and an opening made into the nose below the lower turbinate. In this a wick is placed and the wound in the canine fossa is stitched up, leaving drainage through the nose. As a rule the canine fossa opening will close even if not stitched.

This operation does away with the necessity for wearing splints in the antrum, which often produce irritation, and it allows free view of the interior of the cavity. In conclusion, attention should be called to the possibility, recently demonstrated by Dr. Mosher, of attacking the ethmoid and sphenoid region through the walls of the opened antrum.

ON THE DIAGNOSIS AND TREATMENT OF THE DISEASES OF THE FRONTAL SINUS.*

BY LEWIS A. COFFIN, M.D., NEW YORK.

Were our knowledge of the diseased frontal sinus and the desired results of our treatment of that sinus commensurate with the amount of literature on the subject, we might better occupy our time in the consideration of other subjects to-day; but all feel, probably, that we have not as yet attained the best to be hoped for in the treatment of frontal sinus diseases. Nevertheless, the fact that so much is now being written, and that by so many different workers, each of whom must feel that he has some mite which he would add to the already known and tried, is a sure sign of progress and gives promise of better knowledge and results.

It may be taken for granted probably that all know where the frontal sinus is, its anatomy, how drained, its relation to the other sinuses, etc. Of its functions I have never seen one mentioned that impressed me more than to make me feel that inasmuch as it probably has a function, this may be it, but I don't think so. Various operations have been proposed and done, and I am sure the names of Ogston, Luc, Jansen, Kuhnt, Czerny and Golovine, present to the mind of any rhinologist a more vivid picture of the classical operations done and described by these men than any description which I might make, could possibly do.

I shall content myself, therefore, with a discussion of the diagnosis, the various operations and the statement of deductions from my personal observation and experience.

DIAGNOSIS: I. ACUTE.

The diagnosis of acute sinusitis presenting its full quota of recognized symptoms, offers but little trouble to the trained rhinologist or surgeon. A case which comes before us suffering acutely from frontal headache extending outward toward the temple, giving history of a lately preceding attack of acute rhinitis, grippe, measles, typhoid, syphilis, or other malady, often attended by disordered function of the respiratory mucosa, and complaining

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of an increased nasal discharge from the affected side, presents the subjective side of the picture, and directs our attention to, as well as our efforts toward the exploration of the frontal cavity. If our suspicions are right, we shall find probably, extreme tenderness over the supra-orbital ridge and along the orbital roof, with a possible bulging over the affected sinus or into the orbit. On intra-nasal inspection the mucous membrane is seen to be swollen and boggy, and pus will probably be found in the middle and inferior turbinals, the pus may have been forced up over the anterior end of the middle turbinated, and be seen coming down between that bone and the septum as though from the posterior ethmoidal cells or sphenoidal sinus.

Let me emphasize this point. In empyema of the frontal sinus or anterior ethmoidal cells, if considerable pressure exists between the swollen middle and inferior turbinals, pus may be seen coming down between the middle turbinated and septum. This, of course, is not mentioned as a diagnostic sign of disease of the frontal sinus or anterior ethmoidal cells, but if pus be seen in the lower part of the superior meatus, it need not necessarily mean disease of the posterior ethmoidal cells or sphenoidal sinus. Removal of the anterior tip of the middle turbinal will settle the matter.

Adding to the subjective side of the picture these objective signs, we have a fairly certain knowledge that disease of the frontal sinus exists. I believe that in all such cases barring anatomical anomalies that our trans-illumination lamp will confirm and make certain our diagnosis. The x-ray is said to be a valuable diagnostic agent, but I have had no experience with its use.

II. CHRONIC.

The diagnosis of a chronic empyema may not be so easy. Many cases have their origin by the extension of a chronic process from the nasal cavities, in which case if good drainage persists, I believe that the condition may exist for years and never be discovered except for the aroused suspicions of the rhinologist consulted for the relief of the catarrhal condition of the nose. There is little or no pain on pressure; may be no, or only occasional pain, and trans-illumination may in such cases be of little use, and resort must be had to opening of the sinus either intra-nasally or externally. Those chronic cases in which the mucous membrane has taken on an unhealthy granulation or from which polypi have

developed, present all the symptoms due to pressure from a filled up sinus, which have been described as the symptoms of an acute sinusitis, and the diagnosis of the chronicity must be made from the history of the case considered in connection with the appearance and condition of the intra-nasal structures.

The frontal sinus is the fairly frequent site of osteomata and may contain angiomata. For the diagnosis of these conditions we must rely upon the subjective symptoms and trans-illumination and the x-ray for a working basis, and the sinus must be examined by an exploratory opening for a certain diagnosis. This, the writer claims, is not only a justifiable procedure, but a positive duty in any suspected case, and further claims that if done under proper aseptic methods by making an osteoplastic operation, if merely, for exploration, the patient need hardly lose a day from his ordinary life, and that in the course of ten days to two weeks no trace will remain to show that the sinus was ever opened.

Having seen so many cases in my clinic at the Manhattan Eye and Ear Hospital which left in the minds of the entire staff a doubt as to whether the sinus was diseased or not, many of whom were allowed to drift along under a temporizing form of treatment to eventually have a sinus opened to be found in a diseased condition—has led the writer to have constructed a trephine by means of which any part of a circle may be cut. (See cut.) By use of this instrument it is possible, having dissected up the soft tissues from the periosteum, to easily make an osteoplastic flap. In case no disease be found, the hinged button may be replaced and the soft tissues sutured. Primary union taking place, no facial deformity exists. The incision both in the soft tissues and bone is quite similar to that described by Golovine, although the instrument was devised and used previous to reading his article. It is new.

We have opened but one healthy sinus which was done about six weeks ago, and it is impossible to tell by sight or touch, the location of the opening. In case disease be found, we must decide whether to operate further and what operation shall be done. As to whether we shall operate further in the effort to effect a cure, in a great majority of cases I would answer yes. Of those cases presenting pressure symptoms there can be no question. In many of the chronic cases, complaining of no symptom except the more or less troublesome discharge from the nose, it is at the best a choice of evils, and must be left largely to the decision of

the patient. I should feel that inasmuch as it was seeking relief that placed the patient in our hands, that we are at least justified in doing such operation as we feel will remedy the evil.

AS TO WHAT OPERATION SHALL BE DONE.

Dr. Richards in his excellent paper read before his Society at its last meeting, justly criticises the calling of the various operations after their real or fancied originators, and suggests describing them rather according to their anatomical characteristics. I would suggest as an alternate proposition, naming or describing them according as they vary in principle. For example, I would put them all into either of two classes according as the external wound is immediately closed or kept open and treated as an open wound, speaking of them for convenience, as the open or closed method.

In the closed method the intra-nasal drainage tube is a necessity; while in the open method it may or may not be used, influencing the results not in the least or to a very limited degree, and adding much discomfort to the patient. Undoubtedly both methods have effected cures and the feeling of the writer is that each has its place, and should be used according to conditions found on exploratory examination.

For example, if on examination there be found a simple empyema without destruction of mucus lining, the symptoms due to an occluded fronto-nasal passage, I think one would be justified in closing the external wound immediately, having established drainage into the nose. If a tube is to be used, a soft rubber tube drawn down through the nasal duct offers the best chances of success. Drainage thus established and the sinus washed out from time to time, a cure should result in a comparative short time with little or no facial deformity. I feel that the soft rubber drainage tube drawn down as nearly as possible through the natural fronto-nasal duct offers better promise of success for these reasons:—

First. Little violence is done to the mucous membrane of duct, and it will not subsequently fill with granulations.

Second. The natural canal is tortuous, opening backward into infundibulum, and if kept intact will offer greater protection against future infection than would be offered if a successful attempt be made to establish an artificial duct opening downward and forward through which a metal or hard rubber tube has been inserted.

Third. An artificial canal is very liable, if not sure, to become

obliterated by granulation. This conclusion is altogether at variance with conclusions drawn by Dr. Richards, but is drawn entirely from personal observation. The worst result I ever saw was in a case operated by a skilled general surgeon having had large experience in our special field. The whole anterior ethmoidal region was curetted out, making the largest fronto-nasal opening I have ever seen, and a large drainage tube put in place. Everything for a time went well and the patient was discharged, while in the minds of the surgeon associates were admiration and envy of his daring and skill, but the case soon returned with a large fluctuating mass over the eye, and the operation was repeated on the same lines, to recur again, until finally a complete cure was effected with so great a facial deformity as to make it impossible for the man since to obtain employment. This surgeon, I am sure, has effected several very satisfactory cures since, but has become converted to the open method. The literature of frontal sinus treatment by the closed method is replete with these relapses.



Author's Trephine.

In all cases where great destruction of the mucosa has taken place with attendant bone necrosis, or where a great amount of unhealthy granulation has taken place, or where polypi have formed, or where osteomata or angiomas exist; in fact, in any case where extensive curettement must be practiced, whether limited to the sinus or ethmoidal cells, I believe that the open method should be practiced in the effort to obliterate the sinus. In all such cases I think the only rule necessary as to size of opening is that it should be sufficiently large so that all parts of the sinus may be satisfactorily examined and treated, and no larger.

The point of opening is of importance. For exploratory purposes, the author would suggest that it be as near as possible to the median line, using the trephine in such manner as that the hinge of the osteoplastic flap shall be toward the external canthus of the eye, the lower edge of the trephine cutting just sufficiently low to take in the lowest part of the anterior wall. If it be neces-

sary to enlarge this, it should be first enlarged at the expense of the inferior wall toward the nose. If a greater opening than can thus be made, be necessary, it can be carried outward just along the supra-orbital ridge at the expense of both the lower border of the lower wall, until the entire cavity can be examined and treated.

Of several cases, five in all, so treated at the Manhattan Eye & Ear Hospital, none have failed of a speedy cure, and no relapses. The time of treatment has varied from three to six weeks. In no case has there been enough deformity to bring forth the least complaint of patient, and in two at least, close inspection is necessary to see that any operation has been made.

While on this point, I wish briefly to refer to one case under care of Dr. T. J. Harris:

The patient, a young woman twenty-eight years, on whom Dr. Harris performed the regular Luc operation, removing a small amount of the anterior wall, inserting a drainage tube into the nose. External wound closed. Discharged, cured, relapsed. Sinus reopened and treated as open wound. Time elapsing between original operation and cure, one year, with considerable deformity due to marked depression at point of bone destruction. Six weeks ago reopened because of persistent nasal discharge and for cosmetic effects, opening through bone enlarged at expense particularly of the inferior wall toward the nose: treated by open method with drainage into nose. At this time the sinus is nearly obliterated, external wound nearly closed and marked improvement as to cosmetic results.

I mention this case simply to show that it is not the amount of bony wall removed so much as what part is removed, that influences the cosmetic effects.

Of intra-nasal operation, beyond removal of the anterior end of the middle turbinated and the breaking down of the anterior ethmoidal cells, I have nothing to say but to condemn. Many cases may be relieved, and possibly cured, by this simple procedure, followed by such washing of the sinus as we are able to do, but all cases failing of cure by such means, and demanding for any reason that a cure be made, should unhesitatingly be opened and subjected to such treatment as seems best suited to the case.

To recapitulate:

I trust you will pardon me if I sum up the points to which I wish to invite your attention in a dogmatic manner.

First. Exploratory incision by osteoplastic flap should be done on all doubtful cases and in all cases presenting symptoms which could be accounted for by a diseased frontal sinus where ordinary medical or more simple surgical means have failed to give relief; intra-nasal symptoms may be wanting.

Second. Exploratory opening should be as low as possible in the anterior wall and just over the inner canthus of the eye. If necessary to sacrifice the bony flap, the opening should be enlarged at expense of the inferior wall, and if greater opening be necessary, it should be done at expense of both the anterior and lower walls.

Third. Every part of sinus should be explored and treated according to conditions found.

Fourth. No more work should be done between the sinus and nasal cavity than is necessary to remove the diseased portion of the parts in that location.

Fifth. The closed method should be used only in such cases as are due to obstructed fronto-nasal ducts without extensive disease of mucous lining of sinus, and in which the obstruction can be removed without great violence to the natural fronto-nasal duct.

Sixth. The open method is the surer method in all cases, and the only method in cases of much diseased mucous lining or bony wall or extensive ethmoiditis, making necessary considerable curettement of both sinus and ethmoidal region or either of them, as well as in cases of adventitious growths in the sinus, the author believing that inasmuch as the obliteration of the sinus is the desired end, there is no more need of artificial drainage into the nose than there is that we make artificial drainage into the middle ear when we attempt to obliterate the mastoid antrum and cells.

Seventh. The so-called intra-nasal operation of boring or drilling into the frontal sinus while it may relieve symptoms, is non-curative, uncertain and dangerous, and should be condemned.

THE TECHNIQUE OF FRONTAL SINUS OPERATIONS, WITH REPORT OF THREE CASES TREATED WITHOUT NASAL DRAINAGE.*

BY H. HOLBROOK CURTIS, M.D., NEW YORK.

Such importance has obtained for the operative treatment of frontal sinus disease that the operation of to-day occupies the same place in rhinological surgery, viewed in the light of novelty and necessity, that operations for appendicitis do in general surgery. Temporizing in the matter of intra-nasal frontal sinus treatment, or the too long continuance of antrum irrigation through an exploratory puncture, is to be deplored and condemned. The accessory sinuses of the nose are all important factors in nasal surgery; and at the present time, every rhinologist must be competent to deal with the subject of frontal sinus and antrum suppuration from the surgeon's point of view.

The frontal sinuses, so Grünwald states, have occupied a place in literature for nearly two hundred years, although their significance in nasal disease was but little understood before the investigations of Spencer Watson, Lennox Browne and Heath, extending from 1875 to 1885. Later Ziem, B. Fränkel and many others have given the subject serious attention that has resulted in the existence of an extensive bibliography of the most valuable and instructive nature. In the year 1786 J. L. Welke, of Göttingen, issued a monograph in Latin, "*De Morbis Sinuum Frontalium*," which was translated into German and published in Leipsig two years later. In 1802, P. Michaelis of Jéna, also published interesting observations of frontal sinus diseases. A most exhaustive and elaborate exposition of the subject of empyema of the frontal sinus is to be found in the Warren Triennial prize essay of 1898, written by Howard A. Lothrop, of Harvard. Together with much other valuable information, he gives the historical evolution of the modern operation as it stands to-day in literature and fact.

The earliest external operations were performed on cases complicated by fistula, but these were not commonly followed by cure.

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As early as 1838 Riberi enlarged the communication of the sinus with the nasal cavity by means of an external operation. Ogston deserves credit for the modern operation with its median incision. Luc first advised complete obliteration of the frontal sinus. The Ogston-Luc operation is the mode of entrance into the frontal sinus through the anterior wall first practised by Ogston in 1884, and independently revived by Luc in 1886; hence its hyphenated name. The method is as follows: After shaving the eyebrow, a curved incision is made along the inner third of the superior orbital margin following the ridge to the naso-frontal suture. The periosteum is then reflected and the anterior wall of the sinus perforated by means of a small trephine, or chisel. The opening thus made is enlarged to the size of a dime by means of cutting forceps applied just above the supra-orbital ridge and internal to the vertical line corresponding to the inner canthus. By incising the lining mucosa, the interior of the sinus is then exposed, examined and explored in every direction by a probe, all pus and adventitious tissue removed, and the diseased mucous membrane freely curetted. In order to do this, if the sinus extends more than a few millimeters beyond the trephine opening, it may be necessary to enlarge the aperture with bone forceps. Subsequent steps in the operation are the same, whether entrance is made through the floor of the sinus or the anterior wall. The septum is now explored to find out whether any communication exists with the other sinus. If the two cavities communicate or there is evidence that empyema has invaded both cavities, the septum should be completely broken down and the whole operation done on both sides. It is unsafe to rely upon one nasal duct to drain both cavities.* After the posterior nares and rhino-pharynx have been tamponed to prevent blood and pus running back into the larynx, a probe is passed through the naso-frontal duct, to act as a guide for a trocar that should be passed into the nose; or the duct may be freely curetted. Bony obstructions in this locality, if present, should be broken down to insure a free passage for future drainage. The floor should be attacked far back, where it is thinner than in front. The ostium lies deeper than is generally believed; Tilley found that it may be as much as 28 millimeters from the anterior surface. If not already done, the condition of the frontal sinus and anterior ethmoidal cells should now be explored. If there are indications of softening or

*In certain cases this procedure is admissible.

inflammatory disease, these cells should be freely yet cautiously curetted and opened with a small sharp spoon or other instrument from above downward, to insure free communication with the enlarged fronto-nasal canal. The whole cavity and the enlarged duct should be freely swabbed out with a chloride of zinc solution (grs. xx to xxx ad $\bar{5}$ j.)

There are two ways of completing the operation:

I. The whole cavity may be packed with a thin strip of antiseptic gauze; the external wound closed, except at its inner angle, which is left with one end of the gauze strip projecting. A strip of gauze is to be packed earlier into the naso-frontal canal, the lower end projecting into the nose for easy removal.

II. Instead of this procedure after the chloride of zinc swabbing, a Luc's rubber drainage tube with an upper enlarged open end and a lower rounded enclosed end, is carried on a bent probe into the frontal naso passage from above, until the upper end rests in the frontal sinus ostium, the lower end being drawn out at the anterior nasal orifice. The probe is withdrawn; the part of the drainage tube projecting from the nose is cut off; the periosteum is drawn down and sutured; and the wound closed. A drainage tube sometimes tends to excite the formation of granulations, which on the removal of the tube cause stenosis and cicatrization.

When the tube is not used, but the wound packed with gauze, the gauze should be removed gradually, a few inches cut off daily at the dressing of the wound, to allow the whole cavity to granulate from below upward.

The operation often leaves no deformity whatever, especially when but little of the anterior wall has been removed. Ogston makes a median incision from the root of the nose upward, and many operators still prefer this to the supra-orbital incision, owing to the greater facility thus afforded for the exploration of both sinuses.

There are numerous modifications of the methods described, bearing the names of their originators, as the operation of Nebinger-Praun, Jansen, Czerny, Kuhnt, Röpke, Spiess, Killian, Cauldwell-Luc, etc. Some advise complete removal of the anterior wall, aiming at entire obliteration of the sinus. Jansen seeks to obtain this end by removing the inferior surface and making a large opening into the nasal fossa. Kuhnt removes both the anterior and inferior walls; Röpke has obtained rapidly successful results in this way. Spiess' method of opening the frontal sinus endorsed by no

less an authority than Moritz Schmidt, in which the X-ray is utilized in order to drill or trephine from within the nose, is open to serious objection, since in the hands of the ordinary operator there is too much danger of penetrating the cribiform or orbital plates. The method attributed to Kuhnt, in which he removes the entire anterior and often the inferior walls, and drains externally, irrigating daily with corrosive sublimate solution, the partially sutured sinuses, does not appeal to the American surgeon who is inclined to give greater heed to cosmetic results. A general flattening of the eyebrow gives a peculiar expression to the face, while a limited depressed area does not alter the general features. Röpke, who follows Kuhnt's method of removing both the walls, except that he enlarges the naso-frontal duct, while draining externally, casually speaks of three cases out of seven having double vision after the operation; but states that they eventually recovered.

Milligan's paper on suppurative disease of the frontal sinus*, deals first with the anatomical structures and relation of the sinus to contiguous parts, with special reference to the ethmoidal cells from both a scientific and clinical standpoint. The occurrence also of the occasional continuation of the infundibular tract directly into the ostium maxillaire is pointed out and its importance discussed. The etiology of latent frontal empyema is considered and the difficulty of accurate diagnosis emphasized; its co-existence also with suppurative disease of the ethmoidal labyrinth is noted, and the relation of this to subsequent treatment is reviewed, together with a consideration of intra-nasal treatment, including the use of antiseptic lotions, syringing by means of a specially constructed cannula through the naso-frontal duct, pinning down redundant membrane by means of an escharotic, the use of anti-streptococcus serum, and the employment of oxygen gas. Anterior turbinectomy and various methods of opening the sinus externally are then carefully reviewed; the median incision is advocated, and the importance of securing free fronto-nasal drainage is considered as an absolute essential for a successful termination of the disease. Kuhnt's method is especially commended. The history of fifteen cases, nine being men and six women, (details not given) forms the basis of the paper. In thirteen instances the sinusitis was unilateral; in two bilateral; in five the right sinus was affected; in twelve the left; in all except one, other accessory sinuses were involved. Six

*Lancet, Feb. 9, 1898; Journal Lar. Br., Jan. 1899.

cases occurred between the ages of eighteen and twenty-five; four between twenty-five and thirty-five; four between twenty-five and forty-five; one between forty-five and fifty-five.

Milligan's conclusions are as follows:

I. In cases of acute sinusitis rest in bed, warmth, local depletion, and intra-nasal treatment should first of all be undertaken.

II. In cases of acute frontal sinusitis with obstructed duct and which do not react to local treatment within forty-eight hours, an external operation should at once be resorted to.

III. In cases of chronic suppurative frontal sinusitis (latent empyema) it is advisable first of all to give intra-nasal treatment a fair trial—e. g., washing out the sinus when possible, destruction of all redundant and polypoid mucosa in order to facilitate intra-nasal drainage and, the performance of anterior turbinectomy.

IV. In cases of latent empyema where local treatment fails, and where attacks of sub-acute sinusitis recur at intervals, an external operation should be performed.

V. In cases of latent empyema where any symptoms of ocular or orbital disease supervene, opening and thorough drainage of the sinus should be effected without delay, so as to avoid the risks of septic inflammation of the orbital contents and loss of vision.

VI. In cases of latent empyema where symptoms of cerebral irritation or of cerebral compression are present, the sinus should be fully opened from the outside; erosions of the bony parietes carefully looked for; and if necessary, an opening made into the cranium in order to explore the region of the anterior cerebral fossa.

With this brief resume, I beg to describe as a contribution to the literature of this interesting subject, three cases upon which I have recently operated.

CASE I.—Patient male, aged 23. From childhood had been very subject to colds and catarrh. Had suffered for fifteen months from purulent nasal discharge, which had appeared in both nostrils. There had been a steadily increasing amount of this purulent secretion, which was of such a grumous and tenacious nature that of late boric acid warm douches were necessary every two hours, both day and night, in order that the patient might get any air whatever through the nose. In March last, when the patient presented himself to me, he complained of great nervous restlessness, of loss of memory, inability to concentrate his mind on any subject, and was very anemic and debilitated. Pain over the left orbit had but recently commenced as a symptom. By transillu-

mination. I found a marked umbra over the left maxillary sinus, and also over the left frontal sinus. I at once removed the anterior portion of the middle turbinates and curetted the anterior ethmoid cells which were necrotic, the left infundibulum being full of polyps. Pus was discovered coming from both fronto-nasal ducts. The above procedure rendered the patient much more comfortable and facilitated irrigation. I employed tonics and supporting diet for a week, and removed the patient to my private hospital, where on April 9th I operated as follows: The primary incision was from the fronto-nasal suture past the left superciliary notch in a line corresponding to the upper border of the shaved eyebrow. The bleeding, which was profuse, was arrested by clamps and ligatures, and the periosteum was retracted above and below, exposing a surface the size of a half dollar. I entered the sinus by means of the chisel and bone forceps, a centimeter from the median line, and made an opening a centimeter and a half wide vertically, and three centimeters in length just above the line of the original incision. The sinus was full of pus, and much polypoid detritus. What appeared to be a septum a centimeter to the left of the median line in the left sinus, was found to be the partition between the right and left cavities, a curved probe entering the right nostril easily. The right sinus was found to be only the size of a filbert; while the left was as large as an English walnut, readily holding a yard and a quarter of $2\frac{1}{2}$ -inch gauze. The large opening admitted of breaking down the partition, and curetting the right sinus. I proceeded to enlarge both openings into the nose, removing numerous polyps and scraping the ethmoid cells. As there was less than three-quarters of an inch between the orbits, it was impossible to make a large opening into the nose, a procedure which has become classical: so I determined to remove every particle of the diseased ethmoid I could reach with the sharp spoon and ring curettes, scraping forward and outward and backward and outward, to avoid injuring the cribiform plate—a point well made by Richards of Fall River. The sinus walls were not in good condition; the posterior wall of the left, being so chalky to the feel of the spoon that I did not dare scrape it, except with the lightest touch of a very sharp ring curette. This factor also led me to treat the wound as an open abscess—a thing I did not afterwards regret, as it was three weeks before a single granulation appeared on the posterior wall of the sinus. Being sure I had scraped every particle of membrane from the walls, I irrigated with 1-10000 bichloride solution and took a single

silk suture in either end of the incision, leaving an opening an inch long in the middle of the wound through which I could pack both the sinuses with iodoform gauze.

The temperature of the patient four hours after the operation was $99^{\circ} 2-5''$; and was normal at evening.

On the third day I irrigated with peroxide sol 1—4, when changing the dressing, employing as packing some extra heavy zephyr wool, used for crocheting baby's blankets, which had earlier been sent to Van Horn, who removed the fats and treated it with 5 per cent iodoform. This I found made an ideal sinus packing, and stimulated the granulations very speedily.

After fifteen days I stopped the irrigation by saturated salt solution, which I had used since the first dressing, and packed the wound about every three days, after swabbing with gauze. To-day there has been only a healthy granulation serum on the wool for three weeks; the cavity is nearly obliterated, and not a drop of pus has been found entering the nose, the fronto-nasal orifice being entirely closed.

Before opening the frontal sinus I had made an exploratory incision through the canine fossa, and had daily washed out the very offensive pus contents of the antrum, the probe showing the cavity to be very rich in polypoid tissue.

On April 27th—eighteen days after the sinus operation—opened through the canine fossa into the left maxillary antrum and disclosed the following condition: Cavity nearly full of soft polypoid tissue which bled profusely on evacuating. The probe passed through an opening in the outer wall of sinus for $2\frac{1}{4}$ inches across the spheno maxillary fissure to the pterygoid plate of the sphenoid. Fragments of necrotic bony tissue came away in removing the polypoid mass; and the entire outer lateral wall of the sinus, including the zygomatic surface of the superior maxilla, was necrotic and broken down. Masses of fatty tissue were intruding the cavity whose apex was in the zygomatic fossa. I could not conceive of such destruction of bony tissue, accompanied by so few objective and subjective symptoms. The patient was under chloroform for one hour before I had thoroughly removed the diseased tissues and necrosed bone. In view of the extensive destruction, I was particularly careful of the orbital and nasal walls in curetting. The antrum was packed with $2\frac{1}{4}$ yards of $2\frac{1}{2}$ -inch iodoform gauze tape. This dressing I changed on the third day; and irrigated every third day thereafter with peroxide and redressed. The antrum opera-

tion was followed on the day after by a rise of temperature to 102° , but three days later the temperature again resumed its normal state.

To-day the cavity admits of but one yard of gauze, and the granulations are advancing most rapidly; I intend to discontinue the packing next week. The masseter muscle was at first slightly contracted, not admitting of a wide opening of the mouth. Instead of nearly a quart of secretion per diem, on a small estimate, this patient is now scarcely ever using his handkerchief, and that but for the removal of a normal mucus.

Before operating on this case I gave but a guarded opinion as to a favorable prognosis. But the patient's recovery seems assured, and the result promises to be most brilliant. The patient, a pioneer in Automobiling in America, seems to have been infected by constantly inhaling dust and chilling the frontal sinuses. The usual grip infection did not seem to be an etiological factor in this case.

CASE II.—Female, aged 37. Secretary: After the grip during the winter of 1895 in California, the patient suffered from a discharge commencing in the right side of the nose. The winter following, another attack of grip caused an exacerbation of the symptoms. In 1896 a cheesy foul smelling mass was expelled from the posterior nares at intervals of about a month, the nasal discharge meanwhile always increasing. After the second grip attack, pain was constantly present over the eye, at times also shooting into the ear. On stooping forward great pain in the head always appeared in the right frontal and mastoid region, as well as at the back of the neck. These symptoms were always present on waking in the morning. The patient daily took one dozen handkerchiefs to her place of business. For a year past she has endured agonizing pain the greater part of the time, the pain as I have said, most acute when stooping forward. She had been heroically treated for frontal neuralgia and catarrh. In February work at business became unendurable, and the patient applied to me for relief.

I immediately excised the anterior portion of the right middle turbinate and scraped some polypi from the infundibulum, a procedure followed by the liberation of a teaspoonful of foul smelling pus, which led me to suppose the antrum to be also involved. Transillumination did not confirm this diagnosis; which, however, was found to be a correct one by means of an exploratory alveolar puncture with the trephine.

Upon opening the right frontal sinus in this case, I found the

cavity studded with unhealthy granulations throughout the angles, but not in very bad condition, there having been no retention of pus. The septum was necrotic, and broke down with a touch of the probe, which necessitated enlarging the opening of the anterior wall very considerably, and operating on the left sinus, which was found to be also in tolerably good condition.

The natural openings and nasal ducts were very large in this case, and on this account, and because the cavities produced granulations very quickly, and there was no unhealthy pus visible in the sinuses or in the nose, and the wound was struggling to close, I listened to the entreaties of this young woman and sutured the wound, allowing her to resume her work three weeks from the date of operation. There has been no pus since, and every evidence shows that the cavities are perfectly healthy.

The maxillary antrum in this case cleared up in two weeks with irrigation of salt and boric acid solution, and had evidently been but a reservoir of frontal sinus pus, a fact which possibly accounts for the absence of an umbra by transillumination.

This case differs from No. 1, in that there was very little polypoid degeneration, and but few unhealthy granulations in the frontal sinus, but the disease was accompanied by most intense pain. In the morning, the back of the neck and the centre of the head were always the seat of pain, frontal pain not commencing until 11 o'clock a. m., a symptom which I have observed in several cases of frontal sinus empyema. While not a drop of pus had appeared in the nose since a week after the operation, on two occasions there has been a cheesy foul smelling mass evacuated from the sphenoid sinus, preceded by very violent occipital headache. The interval of discharge is becoming less frequent, and the lump smaller and less offensive. What relation does the posterior pain bear to the sphenoid complication? Or does a possible implication of the posterior ethmoid cells exist with no pus evidence? There has been no pain at all since the operation, except just before the cheesy lump has been evacuated, and this has been occipital. It has occurred on two occasions, and the pain symptom could not be associated with either frontal sinus or antrum. I am inclined to attribute occipital pain to sphenoidal and posterior ethmoidal complication, as the posterior ethmoid cells have so intimate a relationship with the cranial cavity on account of the extreme thinness of their walls and their innervation.

CASE III.—Male, aged 20, Student: Always subject to colds

since childhood. Had grip in Paris two years ago, ever since he has had a continuous unilateral pus discharge, which becomes bilateral during bad colds.

In January, 1901, there was pain over the left sinus and head, which was treated for a week with electricity and coal tar derivatives. The patient afterward consulted a specialist in St. Paul, who probed the fronto-nasal duct, relieving the pain, but not diminishing the discharge, which at times was excessive—a moderate estimate being a pint a day. This always diminished in summer to a few teaspoonfuls. During January and February last the discharge became tremendous; and finally headaches came on daily at 10:30 a. m., lasting until 1:30 p. m., at which time the pain would generally disappear. These headaches and the memory of those of a very severe type the year previous, so severe as to cause nausea, brought the patient to me for the purpose of radical relief.

There existed a very sensitive area on pressure in the inner angle of the orbit. Tapping gently over the superciliary ridge caused a feeling of a "bruise inside." Transillumination gave evidence of pus. These symptoms, with daily increasing pain, caused me to recommend a radical operation at once. The maxillary antrum was also involved on the same side.

EXPLANATION OF OPERATION.

Removed with trephine and snare the anterior portion of the left middle turbinate and curetted the anterior ethmoid cells March 25, 1902.

Radical operation on sinus frontalis April 5th. April 8th removed first molar under gas and found left antrum full of fetid pus—probing proved presence of soft tissue in antrum. On April 30th, radical operation in antrum through canine fossa. May 7th, frontal sinus was apparently full of granulations, so I consequently closed it, employing silk ligatures. May 10th patient took cold and the following day I thought it best to reopen the sinus, but found no evidence of breaking down, nor has there been any pus there since.

An acute discharge came from the infundibulum of the right side during the cold; and a copious flow of muco-purulent material from the ethmoid cells right and left; but the sinus did not break down, nor did the cold seem to affect the reconstructive metamorphosis of the antrum.

In these cases, two of which I showed at the Academy of Medicine on May 28th, I employed a method which was somewhat original, though I do not wish to have my name applied to a frontal

sinus operation already so superfluously baptized. The only point of divergence from the usual operation which I wish to emphasize is, that I drained from the upper instead of the dependent portion of the wound, primarily suturing with two or three silk ligatures the two ends of the crescentic incision made from the fronto-nasal suture to the middle of the superciliary ridge. My reason for this is, that by this method the packing of all portions of the sinus and observation with the sinus lamp of every angle of the cavity is practicable. I keep an opening between the flaps an inch long, in order to gain access to the naso-frontal duct which I most carefully pack, and then, keeping the flaps well elevated by the iodoform wool, as the sinuses granulate I take additional stitches toward the center, leaving but a quarter inch open for the final packings.

I will exhibit the wool and the sinus dressing made at my suggestion by Van Horn. The objection to an unsightly scar need not be feared in these days of plastec surgery, and only the timid operator need run the risk of making an insufficient opening in the anterior wall; for, in order to secure the result we are aiming at, viz.: The obliteration of the sinus, we must boldly cut away as much of the anterior wall as will enable us to reach every point of the cavity, even after the distal sutures are in place. Inversion of the lips of the wound tends to take place about the third week; but by use of a small knife we may make an incision of two millimeters between the periosteum and surface of the flap, which not only freshens the flap granulations, but thickens and elevates the superficial integument if the sinus is carefully packed.

The most important point of the operation, to my mind is, the careful curetting of the sinus, in order to not only remove every particle of unhealthy and polypoid degeneration, but every particle of mucous membrane as well, for the securing of granulation from the bone is the essential element in sinus obliteration. Especially should the base of the wound be most carefully cleansed of every particle of necrosed bone and ethmoidal degeneration. See that the cells abutting the orbit are free from disease; do not fear to clear away the largest possible ethmoidal area;—but not for the purpose of drainage, for in any event the orifice will close very quickly, if the walls are clean. Once having established the closure of the duct and base of the cavity with healthy granulation tissue, we may proceed to treat the case as a granulating bony abscess.

The third point which my experience has taught me is, that irrigation of any kind discourages granulation. For several days

peroxide of hydrogen 1-4 in boiled water may be injected, in order to be absolutely certain of cleansing the denuded sinus; after which for a few days normal saturated salt solution may be used before dressing the sinus. When the granulations are fully under way, the cavity may be simply swabbed with a gauze pledget and the iodoform wool put in without previous irrigation.

While striving to obliterate our frontal sinus by healthy granulations, it can readily be appreciated that in case the fronto-nasal duct does not close, we are still in a better position to decide upon a closure of the wound, as was done in the second case I have reported, in which the fronto-nasal ducts remained open, though the sinuses were nearly full of granulation tissue. In these cases we have a solid granulating wall within the sinus, to either metamorphose upon closure into mucous membrane, or go on to obliteration, as the histological circumstances may determine. I would not, however, under any other circumstances, close a frontal sinus externally which had been the seat of an empyema for any length of time unless, it had a free communication with the nose and was lined with healthy granulation tissue, or, had become completely obliterated by granulations. The unhappy results and frequent recurrences of the discharge after primary closure of the external wound, has led me to abandon a dependence on nasal drainage, except, perhaps, in but very recent cases. I need not say to the gentlemen present, that in frontal sinus work an attention to absolute asepsis is most imperative, from the preliminary shaving of the eyebrows to the removal of the forehead strip for the last time.

SOCIETY PROCEEDINGS.
NEW YORK ACADEMY OF MEDICINE.
SECTION ON LARYNGOLOGY AND RHINOLOGY.

Stated Meeting, May 28, 1902.

Emil Mayer, M.D., Chairman.

Epithelioma of the Tonsil.

Dr. Thomas J. Harris presented a man who had been under his care at the hospital for about one month. There was a history of obstruction on the left side of the throat for about four months. A section of the growth had been examined, and there appeared to be little doubt about its malignant nature. Although there was no specific history, the patient had been given large doses of iodide of potassium recently.

Dr. Emil Mayer suggested that ligation of the carotid might be tried. The use of the x-ray in internal epitheliomata was entirely new, and if Dr. Harris could employ this method and get a good result, he would be in advance of other workers in this field.

Dr. M. D. Lederman thought the treatment must depend entirely upon the rapidity of growth of the tumor. If it were rapid, an external operation should be done.

Dr. Z. L. Leonard said that he had expected to present this evening a case of primary epithelioma of the tonsil, which had come to him the first week of April. The first examination by the pathologist had been unsatisfactory, but at the second one the growth was pronounced to be undoubtedly an epithelioma. The entire tonsil was involved at the time, and the pharynx was also implicated to a certain extent. The case was sent to the New York Hospital, and was examined by the surgical staff there, and then sent back with the opinion that no operation seemed justifiable, and that even if the carotids were ligated the circulation would soon be re-established. The disease had steadily progressed in this patient until now it extended over the hard palate as far as the uvula.

Dr. J. Clarence Sharp thought it would be well to try the x-ray treatment in Dr. Harris' case. Only a few days ago he had seen a man with epithelioma of the tongue undergoing x-ray treatment at the Presbyterian Hospital.

Dr. Harmon Smith said that he had at present a case of cancer of the rectum in which the x-ray treatment was being used on alternate days. The pain had been greatly diminished and the man was gaining strength. In the application of the x-ray to the tonsil it should be remembered that the mucous membrane is not as susceptible to the burning influence of the x-ray as the skin.

Four Cases of Frontal Sinus Disease.

Dr. C. G. Coakley presented four cases of frontal sinusitis and of combined frontal and maxillary sinusitis. The first patient was a miss of sixteen, who had been under the care of an ophthalmologist. There was supraorbital headache on the left side. The right nasal cavity contained a very large middle turbinate, and around and below it was pus. The anterior tip of the turbinate was removed, and the polypi found underneath it were also removed. On passing a trocar into the antrum on the right side pus was found there, and also in the frontal sinus. No ethmoiditis was discovered. Five weeks ago the antrum was laid open and both it and the frontal sinus were found filled with polypoid material. The eyebrows were shaved and the usual incision made along this line. The wound was packed until a few days ago, when the cavity had almost completely filled up. There had been no pus for the past two weeks, and only a slight scar remained. The case was interesting because the headache was entirely on the side opposite to the one diseased. The headaches had ceased since the operation.

The second patient was a lady of forty-four, whose nose was occluded by about fifty polypi. Examination revealed a good deal of pus in both nasal cavities, and transillumination was not satisfactory on account of both sides being affected. On March 30 he operated upon all four cavities at one time. For several days she did very badly, and meningitis was feared.

The third case was that of a man who had suffered from a purulent discharge from the left side of the nose, with recurring and very intense headaches and swellings of the eyelids. The trouble dated back to December, 1900. The dislocation of the nasal septum obscured the view on one side, and transillumination showed no difference on the two sides and very little illumination. The left antrum was punctured and the solution came out perfectly

clear. Two or three days later a swelling appeared along the left upper eyelid, and a week ago, on opening the frontal sinus, it was found filled with granulation tissue. All diseased tissue was removed and the wound packed.

The fourth case was that of a young lady on whom he had done a very different operation. She had double frontal sinus and double antral disease, and he had operated upon her last October. A vertical incision was made on the forehead and a transverse one near the root of the nose. The diseased tissue was removed down to the bone, and a drainage tube inserted and left for three or four days. The wound was closed by suture, and was washed out at intervals. At the present time there was practically no discharge from the left side, but pus was always present on the other side. There was evidently a communication between the ethmoid cells and the antrum on the left side. He also suspected that there was sphenoidal disease.

In answer to various questions, Dr. Coakley said that the length of time the dressings remained undisturbed depended upon the presence of a distinct indication for change. He often removed the outer dressing, but did not remove the packing until there was evidence of discharge or of some complication. In one of the cases the packing had been left undisturbed for ten days. He did not practice irrigation, and made it a rule to disturb the granulations as little as possible. The packing that he had used was a material made by Johnson & Johnson, and called "nu gauze." Great care was exercised not to leave in any stray fibres or threads of gauze, and hence he liked this new double-selvage gauze. There had been at times a great deal of dropping into the pharynx. The quantity of discharge from the unhealed antrum and frontal sinus was considerable. The occasional pain in the vertex or occiput made him think that it was due to pressure on some of the nerves around the sphenoidal sinus. The elderly woman with double frontal sinus disease did not suffer from headache except very infrequently when she had a severe cold in the head. Her trouble, however, had existed four or five years. The size of the opening made into the frontal sinus was about half an inch in diameter. After making this opening he had inspected the cavity in all directions with the light from a head mirror. Firm trabeculae were removed with a large curette.

Dr. Francis J. Quinlan said he was glad to see this new method of operating adopted. He believed that he had exhibited this

method to the section about four years ago, and that it had not been received very cordially. He had since that time endeavored to avoid drainage through the nose. By curetting the infundibulum there was usually no occasion for such drainage if ethmoiditis had been excluded. It had been his custom, however, to make a larger opening, and hence he was astonished that such good results had been obtained by Dr. Coakley with the small opening. He would like to know what was the size of the bone wound.

Dr. Thomas J. Harris said that he felt well repaid at having seen this instructive series of cases of frontal sinus disease. He felt that those who had exhibited these cases were right in the method pursued. Certainly five years ago this treatment had been recommended by Professor Kuhn (?) in his textbook. It had not been very generally adopted as yet in this country, yet a complete filling with granulation tissue was apt to obliterate the temporary deformity following operation. He no longer favored the old operation in most cases. What was desired was a complete filling in of the cavity by new tissue, and this meant the absolute removal of every bit of diseased mucous membrane.

Cases of Frontal Sinus Disease.

Dr. H. Holbrook Curtis presented several cases. The first was that of a college student who had suffered from a discharge since an attack of grip two years ago. The discharge was estimated to be one pint a day. After a time he began to suffer from headaches lasting through the forenoon. The anterior turbinate was removed and the cells were curetted in March. In the early part of April the antrum was opened through the alveolar process, and more radically on April 30. On May 7 he operated upon the frontal sinus. He believed that in the future the effort would be not to effect drainage through the nose, but to eliminate the nasal cavity altogether. The antrum in this case was filled with polypoid tissue.

The second case was that of a woman of thirty-seven, who after an attack of grip in 1895 began to suffer from a discharge from the right side of the nose. A second attack of grip aggravated the affection. After this there was constant pain over the eye, shooting to the ear, and on stooping forward there was a great deal of pain in the frontal and mastoid regions and in the back of the neck. In February he excised the middle turbinate and removed polypi from the infundibulum, thus liberating some pus.

On April 5 he operated on the sinus. The wall between the sinuses was so soft that it was broken down, a free opening established and both sinuses curetted. On April 24, he closed the external wound, not waiting for spontaneous closure because normal salt solution ran through both nostrils. The old method of closure, if everything looked favorable, seemed to him desirable. About every tenth day the sphenoidal sinus continued to liberate its secretion. This he looked upon as an important indication of sphenoidal complication.

Dr. Curtis said that in the patient who suffered so intensely for a long time before coming to him, relief had been afforded at once by removing the anterior tip of the turbinate. When there was excruciating pain in such cases he was inclined to think it was diagnostic of sphenoidal complication. From a perusal of 230 cases that he had had tabulated, the result was favorable just in proportion to the size of the opening in the bony wall. He believed in the widely open wound, and the surgeon of to-day need not fear deformity, for by judicious packing underneath, or by means of paraffin injections, the deformity could be corrected.

Dr. Curtis then spoke of a dressing that he had used, and which he had supposed was original with himself until he had read a description by Turner of Edinburgh. This dressing is what is known as iodoform wool. It is baby zephyr wool, which had been boiled in alcohol and ether to remove the fatty matter. This rendered it very absorbent as well as soft. The anterior flap in these cases should be kept open until the posterior wall is covered with granulations.

Severe Frontal Sinus Disease.

Dr. Emil Mayer presented a woman who had come to him on April 7 complaining of excruciating pain about the eyes. So great was the suffering that an emergency operation was done. The moment the frontal sinus was opened pus welled out very freely. Great supraorbital tenderness, headache and a discharge of pus from both sides were the chief symptoms. As there was some tenderness on the right side of the forehead also, an exploratory operation was done on that side, and quite as much pus found there as on the other side. Drainage tubes were inserted and allowed to remain for ten or twelve days. The tubes were slowly drawn down from time to time. Considering the very serious condition of the patient when first seen, her rapid recovery was quite remarkable.

Dr. Thomas J. Harris presented the following cases.

Syphilitic Contraction of Naso-pharynx.

The first case was that of a girl of about fifteen, who had come to him about one month ago with a history of pain in the throat. Examination showed almost complete loss of the soft palate, entire absence of the uvula and an adhesive process shutting off the nasopharynx from the larynx. The case suggested either lupus or syphilis. As the patient stated that a certain medicine given her in Germany had always done her good, she was at once put on iodide, and she quickly recognized this as the remedy she had taken previously. The case was presented to elicit suggestions as to treatment.

Herpes of Soft Palate.

The second case had come to him only a few hours before. The patient was a young man presenting an eruption on the hard palate. Dr. Lusk, of the dermatological clinic, saw the patient and stated that it was herpes of the soft palate.

The third case showed a possible bad result from paraffin injections. They had been made about three months ago, and although there had been no pain, the bad result was evident. There was a slight reddening of the organ, and some of the paraffin had become encapsulated at the end of the nose. This result was evidently dependent upon the use of too much paraffin and the neglect to make pressure over the nose.

Dr. N. L. Wilson, of Elizabeth, suggested that the iodide be pushed in the case of syphilitic atresis until healing of the surface was secured, and then that the surgeon be guided by the amount of cicatricial tissue present.

Dr. Mayer said that the posterior nares would soon become occluded if not treated, and he thought nothing short of frequent dilatation would be of material benefit. As the trouble was extralaryngeal intubation was not applicable. A spreading instrument such as that used for opening the trache after tracheotomy, which the patient could be taught to use herself, should be employed, and the treatment persisted in for years, if need be.

Dr. M. D. Lederman asked if the patient with herpes complained of very much pain, for, he thought this was pathognomonic of this condition. He had such a case under observation at the present time, and the patient complained only of severe pain and burning. This was relieved by orthoform in powder or tablets, to-

gether with the internal use of the glycerophosphate or lime. The affection in that case had developed close upon domestic trouble and business misfortune.

Dr. H. Holbrook Curtis suggested that the salicylates be pushed in such cases, as these persons were always gouty.

Dr. Harris said that his patient had complained of pain sufficiently severe to prevent him from eating meat or bread.

Stricture of Trachea.

Dr. J. Clarence Sharp presented the following cases: The first was one of partial stenosis of the trachea due to a tracheotomy at the age of six years. The patient was a young man who had been working in a piano factory where there was a great deal of dust. Whether this had caused an inflammation of the mucous membrane of the trachea, or whether some inflammatory condition of the thyroid gland was causing pressure on the trachea, he could not say. The patient, on presenting himself, was suffering a good deal from dyspnea. Under the use of thyroid extract it was possible to inspect the parts as far down as the stricture.

Syphilitic Tumor of Tonsil and Ulceration of Pharynx.

The second case was that of a man who had come to Bellevue Hospital last December with an ulceration of the palate, which was diagnosed as syphilis. Under iodide the ulceration rapidly decreased. The specimen submitted to Dr. Dunham was reported to show no evidence of malignancy. Iodide of potassium and mercury appeared on the base of the tongue, and spread rapidly until the two ulcerations coalesced. Then the ulceration extended to the second molar tooth. The iodide was then stopped and a second specimen was examined, with the same result as at first. All treatment was stopped for three weeks except cleansing the parts. Then special protonuclein powder was insufflated daily and the patient took from three to ten grm. of the powder every twenty-four hours. After about three weeks granulation tissue formed in the ulcerated area, and in about ten weeks the ulceration of the pharynx had entirely healed. The man then went to work, but recently had returned with a subacute laryngitis. This was quickly followed by ulceration of the ventricular band and edema of the arytenoids. The protonuclein was resumed, and now the ulceration was healing up. The speaker said that in giving protonuclein the patient should be seen every day, because after ten grains has been reached, the tissues would become edematous.

Tubercular Larynx; Enormous Doses of Creosote.

The third case was that of a young man who had come to Bellevue Hospital three years ago with a large cavity in the apex of each lung. There was an ulceration of the ventricular band of the true cord on the left side. It was not thought then that he would live more than two months, but he agreed to live out doors and take creosote. This treatment was begun at once, and after he reached thirty drops of creosote three times a day the ulceration on the cord healed. The patient, on his own responsibility, increased the creosote until he was taking one hundred drops three times a day. The cavity in one lung cicatrized and the other was healing. This winter he contracted smallpox, but was again doing fairly well.

Dr. Sharp said that one often met with specific ulcerations which were not at all influenced by iodide of potassium, and also cases of tertiary ulceration which would heal under mercury and were not benefited by iodide. This patient had received both of these agents, but without benefit. He believed the reason the patient with the tubercular larynx was still alive was that he had carefully refrained from any local treatment of the larynx.

Paraffin Injections; Technique.

Dr. Harmon Smith exhibited a number of patients to show the effects of paraffin injections. He intended to show these persons again in October. All of the cases were traumatic.

He also demonstrated his method of giving these injections, and exhibited his syringe. He uses paraffin, having a melting point of 110° F., and an all-metal syringe. He did not advise using more than half a drachm of paraffin at one injection. In the subsequent injections, using a small needle, he endeavored to enter the same spot as at the first injection.

Dr. Francis J. Quinlan said that the greatest difficulty he had experienced with this method of injection was in keeping the paraffin melted. For the past few weeks he had been making use of a hot water jacket or mantle to keep the syringe warm. A block of tin shaped like a horseshoe is used by an assistant making pressure over the brow. The mobility of the parts should always be considered and the operation done under strict asepsis.

Dr. Carl E. Munger, of Waterbury, Conn., exhibited photographs of a case upon which he had made use of these injections. It was a case of deformity, considerable in degree, following an

abscess of the septum. Twenty-five drops of paraffin were injected in this case, and although he had expected that, more than one injection would be required, the result after this first injection was almost perfect.

Dr. Harmon Smith said that he had seen the operation on the case presented by Dr. Harris. The paraffin was injected under too great pressure, the operator endeavored to correct too much at one time and no pressure was made around the bridge of the nose and the inner canthus of each eye. He made it a rule himself never to attempt to overcome the deformity completely at one sitting, but to make a number of injections, no matter how slight the deformity to be corrected.

LARYNGOLOGICAL SOCIETY OF LONDON.

Seventy-Third Ordinary Meeting, April 11, 1902.

E. Cresswell Baber, M.B., President, in the Chair.

Case of Laryngeal Growth in a Man aged 50.

Shown by Dr. Wyatt Wingrave. The patient was a dock laborer, and when first seen, about two months ago, complained of hoarseness of twelve months' duration, with some dyspnea on exertion for past four months. He admitted having a "chancre" twenty years ago, but without any sequelae.

On laryngoscopic examination, two smooth opalescent swellings were seen overhanging the right half of the glottis. The cords were normal in appearance and texture. He was ordered sedative inhalations, and carefully watched. The symptoms considerably improved, but the swellings distinctly increased in size, a third one appearing just above the left capitulum.

Fourteen days ago considerable edema of uvula and palate appeared.

The voice was at the present time very good, and there was very little dyspnea on exertion.

He had not lost weight, and felt quite well. There were no enlarged cervical glands.

Case of Tumor of Larynx.

Shown by W. H. Kelson. The patient, a woman aet. 74, came to hospital suffering from hoarseness of nine months' duration. On examination, there was seen to be a rounded greyish colored tumor, about the size of a marble, lying on and concealing the anterior part of the left vocal cord, and apparently originating from the left ventricle. It was firm when touched with a probe; the cords moved well, but were prevented from coming into apposition by the growth.

He thought it was probably a cystic fibroma.

Dr. Scanes Spicer thought the tumor was a cyst. It was white, and shaped like a pearl.

The President also thought of its possibly being a so-called prolapse of the ventricle, but it did not look solid enough for that.

Dr. Jobson Horne said he could not be quite sure from inspection alone whether the growth lying on the left vocal cord were solid and dependent from the roof of the ventricle, and therefore similar in its pathology to one he had described (vide "Proceedings," Vol. V, p. 98), or whether it were of a cystic nature, and formed by the prolapsed lining of the ventricle. Its appearance, he thought, was suggestive of the latter.

Dr. St. Clair Thomson had seen a similar case in a small boy. On being punctured a fluid came out, and the whole thing collapsed. A fortnight later the patient returned to hospital with the growth filled up again. It was removed with forceps, and found to be a cystic fibroma.

Sir Felix Simon was of opinion that this cystic was a fibroma. The surface was too granular for a simple cyst.

Dr. Kelson himself thought it was a cystic fibroma. He had cocaineized the larynx and felt it with a probe, and it seemed to be rather firm.

Case of Tuberculous Disease of the Larynx.

Shown by Dr. W. H. Kelson. This occurred in a woman aet. 42, who came complaining of loss of voice for two months and loss of health for two years. There was swelling and loss of movement of the left arytenoid, and a pink granuloma projecting from the left ventricle and overlapping the left cord. There were indications of phthisis at both apices. A very few bacilli were to be found in the sputa.

Dr. Grant said it seemed a very pretty case of what was sometimes described as prolapse of the ventricle, which was supposed to be an eversion of the mucous membrane, whereas really it was just a growth of granulation tissue—possibly tubercular—from the ventricle.

Case of Syphilitic Laryngitis, Possibly Complicated with Tuberculosis.

Shown by Dr. St. Clair Thomson. The patient presented fixation and ulceration of one cord. There was also ulceration of one faucial pillar, and some ulceration on the posterior pharyngeal wall. This assisted in the diagnosis of syphilis, and the condition improved considerably under specific treatment. Still, in spite of large doses of iodide of potassium the condition did not entirely clear up, and, while the cord improved, there seemed to be more infiltration in the inter-arytenoid region. There were no constitu-

tional symptoms of tuberculosis, and the temperature was always subnormal. The man had gained in weight.

Dr. Permewan asked why Dr. Thomson thought this was possibly a case of tubercle. To him it seemed that there were no marked tubercular symptoms, and that it was simply syphilitic.

Dr. St. Clair Thomson, in reply, thought the case tubercular because of the intra-arytenoid thickening, which had slightly increased, though the patient had improved with regard to the fixation and ulceration of the cord.

Case of Congenital Absence of the Front of the Nose with Occlusion of the Anterior Nares.

Shown by Mr. Arthur H. Cheatle. The infant was six weeks old. I was the mother's first child, and was born at full time. There was no history of syphilis; the nasal bones were present, but the framework of the nose in front of the nasal bones was absent. The palate was normal, and no other deformities were present.

The President considered this a highly interesting case. Whether it was due to intra-uterine syphilis or not was the only point which might be raised.

The case showed that a person could sleep perfectly quietly when the nose was completely obstructed. Though with polypus of the nose causing partial obstruction there was often great difficulty in breathing and noise during sleep, yet when there was complete obstruction the patient might after a time sleep comfortably.

Dr. Fitzgerald Powell said it was a very interesting point whether this was congenital or whether it was due to intra-uterine syphilis, but one would expect to find some other evidence of syphilis in the child if this was a case of intra-uterine syphilis. He should think it would be a case for a plastic operation in later years.

Dr. William Hill asked exactly what was meant by describing the condition of occlusion of the nares as congenital. Did those who employed the term here mean a closure from an inflammatory process occurring during intra-uterine life? Looking at the matter from a purely development point of view, the term "congenital" was usually applied rather to a defect of closure from arrested development; in this case the nares, formerly patent, had obviously been closed up later by an active inflammatory process in utero.

Specimen of Rhinolith.

Shown by Mr. Arthur H. Cheate. This specimen was removed from a woman aet. about 50 years, who had been troubled with the right side of her nose for twenty years. From the prescription she brought the origin was syphilis. The fetor was extreme. The rhinolith, which had to be broken before it could be extracted, weighed 140 grains. The nucleus apparently was a portion of necrosed inferior turbinal, as the configuration of the largest portion of the stone demonstrated. After removal the inferior turbinal was seen to be absent.

Mr. Jackson, of King's College, reported that the stone was composed of calcium phosphate and carbonate in almost equal proportions, together with a trace of organic matter.

A New Form of Laryngeal Forceps.

Shown by Dr. Lambers Lack. These forceps were mentioned at the last meeting. There were similar to Mackenzie's well-known forceps, but the blades formed an obtuse angle with the shaft, and thus, when in the larynx, held the epiglottis out of the way. The forceps were also thus removed from the direct line of vision, and enabled a better view of the growth to be obtained at the moment of seizing it; for this reason, also, the blades were much more slender than Mackenzie's. One pair of the forceps were curved forwards at the tip of the blades to enable a growth in the anterior commissure to be more easily reached. The forceps had been used for over three years by various members of the staff at Golden Square, and had been found useful.

Dr. Fitzgerald Powell again produced the forceps he had shown at the March meeting, and pointed out how they differed from Dr. Lack's.

A Case of Thyrotomy for Tuberculosis of the Larynx.

Shown by Dr. Lambert Lack. The operation had been performed for what at the time was diagnosed as epithelioma of the larynx, and Dr. Lack thought the case presented many features of interest.

The patient, a finely made, robust man aet. 66, was an old soldier, and, apart from wounds, had never had a day's illness. He was first seen in April, 1901, for hoarseness, which had commenced three months previously and was gradually increasing. On examination an ulcer with raised edges and some surrounding thickening was seen occupying the centre of the right vocal cord, the move-

ments of which were considerably impaired. The rest of the larynx was of normal color and contour. The patient had some cough and expectoration, which he stated was not unusual to him during the winter. Examination of the chest showed signs of bronchitis. The sputum was examined for tubercle bacilli with negative result; the patient was otherwise in good health, and no enlarged glands could be felt. The diagnosis pointed so strongly to epithelioma, and the case was so eminently suitable for operation, that thyrotomy was advised and immediately carried out. The entire right vocal cord was removed in the usual way, and the patient's recovery was uninterrupted.

The growth macroscopically looked like an epithelioma, but Dr. Horne, after microscopical examination, reported it as tubercle.

The patient made good progress until the commencement of August, 1901, when enlarged glands were noticed in the neck. In September there was a hard lump under the upper part of the right sterno-mastoid about the size of a walnut, and rather fixed. Immediate removal was advised and at once performed. The operation involved removal of part of the sterno-mastoid muscle, of the spinal accessory nerve, and of the internal jugular vein. Some of the mass of glands, which was removed entire, were found to be breaking down, and looked suspiciously like suppurating tubercular glands. This opinion was confirmed by microscopical examination, and there was no doubt but that this case was really one of tuberculosis throughout. The patient had since remained in his usual state of good health, but had no voice, the cicatricial band which usually takes the place of a removed cord not having formed. The left cord moved freely, but had an apparently hollow space opposite to it. This case seemed a remarkable one for the following reasons:

1. The laryngoscopic appearances of the localized growth on the vocal cord, the normal condition of the rest of the larynx, the patient's age and vigorous health, the absence of signs of tubercle in the chest, the absence of tubercle bacilli in the sputum, etc., all pointed to a diagnosis of epithelioma. (This was confirmed by my colleague, Mr. Parker.)

2. Even after the pathologist's report an error was suspected, especially when enlarged, hard, fixed glands appeared in the neck.

3. The good result of the operation, although performed for tuberculosis.

4. There were no signs of the presence of phthisis even now.

5. The failure of the formation of the cicatricial band which usually takes the place of the removed cord, and the consequent continuance of aphonia.

Sir Felix Semon thought the case very interesting from many points of view. First of all Dr. Lack's description of the case, i. e., from the clinical appearances, there seemed to be hardly any doubt that it was a case of malignant disease. When the microscopic examination disproved that, he could quite understand that Dr. Lack was very much inclined to disbelieve microscopist in this particular instance.

Then came the glands in the neck, which would help to increase the belief in the malignant nature of the disease. Nevertheless this view was again disproved and the case ultimately shown to be one of tuberculosis.

Thirdly, there was a fact to which Dr. Lack had drawn his particular attention. They knew that usually in cases of thyrotomy undertaken for malignant disease of the larynx, a ridge formed corresponding to where the diseased vocal cord had been removed, and that the voice materially improved, usually up to the end of the first year, but in this case there was a complete absence of such a ridge, and it was impossible to say why.

He was most interested, too, in the appearance of the left vocal cord during phonation. In the latter part of phonation one saw quite distinctly the arytenoid cartilage not merely move inward but make quite a quarter-turn inwards, so that its vocal process pointed directly into the glottis, and the vocal cord assumed a completely triangular form instead of its usual linear outline. He had never seen this before, and, again, it was practically impossible to say why it should be so. It was, of course, due to the action of the *lateralis* muscle, but why this should contract in this exaggerated way it was difficult to see, unless a sort of subluxation had been produced by all possible energy being put into the action of the remaining vocal cord in the effort to get a better voice.

Dr. Permewan had also noticed this appearance of the left vocal cord with some interest, and it struck him as a sort of rotation or turning on itself which might be due possibly to the fact that the anterior end of the cord might have been cut across. He asked whether the thyrotomy had been only unilateral or whether the excision had extended to this side as well.

Mr. Parker had seen in this case with Dr. Lack from the first, and from the clinical appearances when he first saw the patient he quite agreed with Dr. Lack that there was little doubt as to the malignant nature of the disease and that the proper treatment was immediate operation.

Dr. Scanes Spicer said this case raised to his mind the question whether resort should not be had in certain cases of tuberculosis of the larynx to the external operation and the removal of the affected area, more especially in those cases in which tubercular process was definitely localized.

Dr. Jobson Horne said he was the pathologist and microscopist referred to. He had expressed the opinion that the disease was tuberculosis, and not epithelioma, and, as Dr. Lack had stated, he had not departed from that opinion, notwithstanding the surprise the result of the examination had occasioned, for it was not the first time he had microscoped a vocal cord believed to be the seat of epithelioma, and had found tuberculosis. He considered that the statistics had been enriched by Dr. Lack having published this case. It went to show how fallacious and misleading statistics must be which did not include negative cases. To obtain trustworthy statistics of operations for epithelioma of the larynx, Dr. Horne said, there were at least two essentials; the first was to have a microscopic examination made in every case of the parts removed by the operation, and the result of the examination appended; the second, which was, perhaps, more important, was to have the name of the microscopist also stated.

Referring to the suggestion made by Dr. Scanes Spicer, that the result of the case opened up a field for further operations of the kind for tuberculosis of the larynx, Dr. Horne said the results rather disproved than supported the theory. The cord itself presented under the microscope the appearance of chronic, quiescent, and, one might say, arrested tuberculosis. Four months later some glands were removed from the same side of the neck, which doubtless would have been removed at the same time as the thyrotomy was done had they been sufficiently affected. The sections of the glands showed recent and more active tubercle, and suggested a lighting up of old disease with a reinfection, consequent upon the disturbance of the old tuberculous focus in the larynx itself. Dr. Horne expressed himself desirous of showing the sections to the Society at the next meeting.

Mr. W. G. Spencer did not quite agree with the last speaker. He thought this case ought to be classed with those of senile tuberculosis, which had been mentioned by surgeons. They were more common in connection with the bones, but there were other forms of senile tuberculosis occurring in old people, who otherwise had no connection with the disease—no family history—and who had not shown tuberculous lesions in earlier life. All these cases of senile tuberculosis were progressive forms of the disease, and he thought that the operation in this case was amply justifiable, and would contribute to their knowledge of other cases of senile tuberculosis in different positions. As to the frequency of such cases, it might possibly be greater in the larynx, but even here must be very rare. He thought it was of further interest, pathologically, in connection with the question that had been raised of carcinoma of the larynx, i. e., whether in old age or towards old age there was a diminished resistance against the pathological lesion causing epithelioma. Here some chance tubercle bacilli getting on to the patient's cord, and he possibly having less resistance against the attack than in early life, tuberculous disease had developed.

Dr. Lack said the case was such an exceptional one that he did not think it afforded any reasons for operating in other cases of laryngeal tuberculosis. Thyrotomy and even tracheotomy were generally disastrous in these cases. He did not think this could be called an arrested growth, as the hoarseness was of only three months' duration and was increasing. Nor did he think complete excision of a focus of disease likely to spread the infection to the glands.

Specimen of Cystic Growth of the Septum and Microscopic Section.

Exhibited by Dr. Pegler. The tumor was removed from a male patient aet. 30, who came to the hospital January 31, 1902, complaining of what he thought was a polypus in the nose, creating obstruction. On examination a pendulous body was seen occupying the left middle meatus, bluish grey in color, and resembling a polypus to all intents and purposes, though less flattened and rather more opaque. A distinct attachment to the left side of the septum was traced by the probe, at about the region of the tubercle or a little higher. Dr. Clayton Fox also examined the case, and an edematous septal polypoid hypertrophy was diagnosed. It was removed with a Mackenzie snare with the usual antiseptic precau-

tions, and neither bleeding nor serous fluid escaped. The after-appearance of the middle meatus was peculiar, the septum showing a marked indentation, and the anterior half-inch of the middle turbinal being strongly deflected outwards at the site occupied by the growth, which might therefore be presumed to be either of congenital origin or, at all events, to have existed for a long period. It proved on inspection to be a cyst with a short, hollow pedicle. The patient wrote three days later excusing himself from keeping his appointment at the hospital on account of "a bad influenza cold," and did not subsequently return. For full notes of the after-history the exhibitor was indebted to the patient's private medical attendant, who was called in on February 7. At this time the patient was found to be suffering from shiverings, pains in the limbs, and headache, with a temperature of 100°. There being three other cases of influenza in the house, this disease was diagnosed. After a temporary improvement the case took an unfavorable turn, and by February 9 symptoms of meningitis had developed. The left arm and leg became paralyzed, coma set in, and the eyes were drawn to the left. Later, large twitchings and convulsions invaded the right side of the body, arm and leg, and the patient died on February 15. The report states that the initial symptoms indicated right-sided brain trouble, but that the patient had no local signs drawing attention to the nose during the illness, neither swelling, pain, tenderness on pressure, nor discharge, and on this account the exhibitor had not been communicated with. The tumor, which had been placed in spirit immediately after removal for subsequent examination, was handed over to Mr. Bland-Sutton, as there seemed reason, in the light of what had followed, to suspect meningocele. That gentleman had carefully examined it, both macro- and microscopically, but thought "the source of the cyst was a matter for conjecture." The micro-sections showed two distinct zones of tissue; the outer consisted of nasal mucous membrane; it was surrounded by columnar, non-ciliated epithelium, and continued racemose glands, but no sinuses. The inner zone was much thicker in certain situations than others, and was made up of connective tissue containing many elastic fibres, but did not appear to have a definite squamous epithelial lining. The appearances were well shown in the drawing handed round. The specimen had been mounted by Mr. Pollard, of Middlesex Hospital, who also made the micro-sections.

Dr. Dundas Grant thought they all ought to express their indebtedness to Dr. Pegler for bringing forward the case. When a case ended fatally, as this had, the interest was enormously increased, and its instructiveness was increased, perhaps, in geometrical proportion. If Dr. Pegler had only mentioned to them at the outset that the case had terminated fatally, they would have been able to follow his minute description of what seemed rather small details with much greater interest. But he thought the points brought before them showed that the diagnosis he had made as to the site of the tumor was correct, and no doubt he wished to eliminate any possible idea of its being a tumor connected with the meninges, such as a meningocele. The case was a very interesting one, and there was always the possibility of such a coincidence occurring in anyone's practice which had to be kept in mind when carrying out even minor operations during a period of epidemics. Many of them had been much distressed by rashes occurring which turned out to be scarlet fever, and the patients suffered considerably, and they themselves were subject to grave anxiety. He thought Dr. Pegler's description should be accepted as correct.

Dr. Wingrave said that the evidence of the histology rather showed that whatever central connection the swelling had, it consisted to a greater extent of distension of some of the lymph or connective spaces of the periosteum. One could see very clearly the normal mucous membrane covered with what appeared to be the olfactory cells in a somewhat fragmentary state. Underneath that one found a very thick connective tissue layer with elastic fibres conforming very thoroughly to the description of periosteum. In that deep periosteal layer one would find large distended spaces, so that it was quite possible that it might have been a cystic distension of the periosteal layers and even possibly that it might have been a continuation of the dura mater. In the absence of a definite statement as to where it was removed from, and in the absence of any histological evidence of meningeal structure, it was a pure assumption to say that it was directly connected with the cranial cavity. Certainly the cyst was not lined with any kind of epithelium suggestive of subdural continuity, or that could be differentiated from the connective-tissue cells themselves.

Dr. Hill suggested that the specimen and sections be referred to the members of the Morbid Growths Committee, who should have power to add other clinicians to their number in order that the

questions raised might be thoroughly investigated. The clinical history did suggest very forcibly to many present that this was a case of meningocele. If one removed a polypus from the nose of a patient who soon after died from meningitis, and if it were then found that the presumed polypus was a cyst, and came from the septum of the nose, a strong case was made out in favor of its being a meningocele. Of course, the remarks of Drs. Pegler and Wingrave went to show that the tumor was not like a meningocele histologically, but then they all knew that congenital abnormalities often underwent alterations in structure. The case was almost unique, and the references in medical literature to the subject were very vague. Whether it turned out that one really had to deal with a genuine cystic tumor of the septum or a meningocele, an important case would have been elucidated and added to their records.

Dr. St. Clair Thomson suggested that the possibility of a congenital meningocele should not be dismissed without such a full investigation of the subject as Dr. Hill had proposed.

In investigating the literature of the subject in connection with cerebro-spinal rhinorrhea, it was suggested by one authority—and it seemed to be a working hypothesis—that some of these cases of spontaneous cerebro-spinal rhinorrhea might be congenital meningoceles which had spontaneously ruptured. He found amongst the literature that many cases had been put on record of patients who, sooner or later, became infected through the nose, and a great many of them died with meningeal symptoms.

The importance of the nature of this tumor being definitely settled was so great as to merit the investigation by the Morbid Growths Committee.

The President thought the Society was much indebted to Dr. Pegler for bringing forward this interesting case.

Dr. Pegler said, in reply, that on receiving the report of subsequent events, his first impression, supposing any connection between the removal of the byst and the meningitis existed at all, was that the growth had been a meningocele. He had since been led to relinquish that suspicion as a result of the microscopic investigation over which, in addition to Mr. Bland-Sutton, he had the assistance of Dr. Wyatt Wingrave.

The microscopic appearances certainly tallied with his recollection of the attachment of the pedicle. He was anxious that the sections should be referred to the Morbid Growths Committee, but he feared that, there having been no necropsy, a great deal in connec-

tion with the case would have to remain conjectural. Anyhow he had brought it forward as a matter of duty, as well as on account of its unique interest, for he had found but little in the literature of septal tumors that had thrown light upon this case. It was stated by unequivocal authorities that cystic growths of the septum and also meningoceles under certain conditions should be exercised.

On a show of hands it was unanimously decided to accept Dr. Pegler's offer to refer the specimen and sections to the Morbid Growths Committee.

Case of Epidermolysis Bullosa in a Woman, associated with Mouth and Throat Lesions.

Shown by Dr. William Hill.

Dr. Vinrace asked Dr. Hill if he proposed to adopt any treatment, and whether he had acquainted himself with any line of treatment which had been acted on in the past in the many hospitals this patient had attended.

Dr. Hill, in reply to Dr. Vinrace, said that no treatment did any good in these cases as regards the skin lesions.

Case of Tumor of the Right Vocal Cord formed during Influenza in a Man aged 50 (for Diagnosis).

Shown by Dr. Donelan. The patient had attended the Italian Hospital two months ago, suffering from influenza. The paths of infection appeared to have been the pharynx and larynx, as there were well-marked symptoms of true gripe. The larynx was intensely congested; there was, however, no growth, and the patient had a clear voice up to the time of attack. Seen again two days ago, a growth about 4 mm. long by 2 mm. wide projected backwards and inwards from about the middle of the right vocal cord. Apart from the hindrance to approximation of the cords due to the growth there appeared to be also some paralysis of the arytenoid muscles.

Dr. St. Clair Thomson did not altogether follow the description of this case, but there seemed to be some ulceration on the left vocal cord and a good deal of inter-arytenoid thickening. The man had lost weight, the pulse was quick, and he had night sweats. He thought the subject of tuberculosis ought to be borne in mind in connection with this case, for it frequently developed rapidly after influenza.

Dr. Donelan, in reply, said he had seen the patient only at an interval of a month or five weeks, and as the growth had developed

only during the last nine weeks he had not much opportunity of studying the case. The patient had syphilis twenty years ago, which might alter the view taken as to the diagnosis.

Specimen of Fibroma Removed from Left Maxillary Antrum of Male aged 18.

Shown by Dr. Fitzgerald Powell. This patient came under observation complaining of nasal obstruction. On examination his septum nasi was seen to be deflected to the left, preventing a good view of the nostril from in front, but on examination of the posterior orifice with a mirror a small growth was observed filling the upper half of the left choanae; the appearance was that of a polypus or enlarged turbinate. An effort was made to snare it under cocaine, but only a small portion could be removed by the snare. The patient was put under a general anesthetic, and an attempt made to remove the growth from behind with Howell's adenoid forceps, but in attempting to seize the growth it slipped out of reach, and on pushing the finger in after it a considerable soft mass was left lying in the left maxillary antrum, through an opening in the posterior third of the inner wall.

Keeping the finger on the growth, a long-handled, sharp spoon was pushed in through the nostril from the front, and using considerable force the growth was freely curetted from its attachment to the under surface of the floor of the orbit and scooped into the nostril, where it was seized by the adenoid forceps pushed up the nostril from in front and drawn out.

It was found to be a dense fibroma about the size of a small kidney. Hemorrhage was very free during the operation, but stopped when the growth was removed, and the patient was at present doing very well, and had not had a bad symptom since the operation, which was done a week ago.

The President thought it was difficult to extract such a large tumor through the nose so as to be sure of its complete removal.

Dr. Powell said that nobody was more surprised than he was when the tumor came through the nose entire. When he put his finger into the post-nasal space and felt the mass in the left maxillary antrum, he had no idea that it was of the size it turned out to be. It seemed to have grown from underneath the floor of the orbit. There could not have been a very wide attachment to it, and from the general contour of the tumor he thought that it had come away entirely, though, of course, he was not absolutely certain.

If one had known the size of the tumor it would have been advisable to open the antrum from the front and remove it, or else remove the jaw. But as it came out as it did he was very well satisfied with the result. The case was being kept under inspection to see if there was any recurrence.

**Case of Malignant Growth in the Nose of a Male Patient aged 61,
Probably of the Nature of Alveolar Epithelioma.**

Shown by Dr. Dundas Grant. John C—, aet. 61, presented himself at the Throat and Ear Hospital a week ago on account of complete obstruction of the right nostril and partial obstruction of the left. The right nostril was completely filled with a polypoid growth of a pinkish color but irregular in shape, and rough over the greater extent of the surface. The irregularities were interspersed with small masses of shiny myxomatous growth. The soft part of the external nose was bulged outwards, but there was no displacement of the nasal bones and no bulging of the superior maxilla. There exuded from the nostril a sanious discharge which irritated the margins, and the nose emitted a peculiar heavy smell suggestive of putrefying flesh, and distinct from the odor of ozena or simple polypus or antral suppuration. Dr. Grant had observed this smell in connection with sarcoma, sphyiloma, and epithelioma, and was disposed to think it of some diagnostic value. By posterior rhinoscopy there was seen to be a large mass blocking up the right choana and extending over the back of the left one; it was of the same nature as what was seen in the front, and after palpation showed marks of hemorrhage. There was no distension of the antrum in any direction, and on transillumination it was found to be perfectly translucent. The trouble dated from the earlier part of last year. In May he spat up some blood which did not appear to come from the lungs; in June and July the back of the throat became somewhat obstructed, and in August a fleshy lump dropped down from the back of the nose into the pharynx about the size of a small shelled walnut and of a dark color. During the later months of the year numerous polypi were extracted, but apparently without effecting a complete clearance. In March of this year an endeavor was made to clear the nose through the nasal passages by a surgeon of the highest ability, who considered the growth to be malignant, and although a large quantity was removed, recurrence had taken place by the time he came under Dr. Grant's care.

The case now presented the characters of malignant disease

growing from some portion of the nasal cavity, but in all probability not the antrum. There was no enlargement of glands.

A small portion of the growth had been removed and examined microscopically by Dr. Wingrave, who found it to consist of a stroma formed of densely packed fusiform cells and enclosing irregular alveoli which filled with epithelial cells; the surface epithelium was stratified, the deepest portion consisting of columnar cells covered by nucleated spheroidal cells; this epithelium invaded the stroma, filled the alveoli, and expanded irregularly to become cystic; the cells in the alveoli fell out during preparation. Dr. Wingrave considered that the epithelium had invaded both from the surface and from the glands; he considered it probably malignant, but the opinion of members was invited as to the nature of the specimen. It might be stated that there was no history of specific infection, and that the patient had of late been gaining flesh, although he had lost it to some degree during the latter part of last year.

Dr. Grant suggested an external operation, making an incision round the side of the nose and through the upper lip, to which could be added one below the orbit if excision of the upper jaw, completely or in part, should seem necessary.

Mr. Spencer thought this a very malignant case, and that it was the worst form of burrowing epithelioma or carcinoma of the antrum, and would require removal of the upper jaw. The glands were beginning to enlarge under the jaw which, if taken away at a second operation, might prolong the patient's life a little, but he was afraid the results in these cases were always bad, and hardly any cases with this particular form of growth were cured. Although the section shown was rather thick, yet the chief element was distinctly cylindrical epithelium arranged in alveolar masses, and not sarcoma.

Mr. Robinson thought it doubtful if it was a case of carcinoma at all. In the main it appeared to be sarcomatous with the normal glands embedded in this structure. It certainly was not the usual type of alveolar or glandular carcinoma, such as would arise from the lining membrane of the antrum. Transillumination, which had been done, might here assist, as the antrum appeared to be free. The growth seemed rather to spring from the nasal wall.

Dr. Wingrave said that one of the specimens was somewhat thick, yet clearly showed its epithelial nature, which, he thought, was strongly suggestive of "duct cancer."

Dr. Lack said the section was not a satisfactory one, and hoped the specimen would be referred to the Morbid Growths Committee.

Dr. Dundas Grant expressed his willingness to have the growth submitted to the Morbid Growths Committee, but thought it would be undesirable to postpone the operation on that account.

Case of Paralysis of Left Vocal Cord in a Female aged 27.

Shown by Dr. Wyatt Wingrave. The patient had complained of hoarseness and shortness of breath for fourteen months also slight deafness since childhood.

There was a history of two attacks of acute rheumatism.

The voice was weak, and there was dyspnea and palpitation on the slightest exertion or excitement.

She stated that the voice suddenly changed after a bad cold, and had remained more or less hoarse and weak.

Laryngoscopy showed complete fixation of the left cord in extreme abduction.

There was a double basic systolic murmur, with cardiac dullness extending to supra-sternal notch, associated with thrill and pulsation, although the pupils were equal and radial pulses were equal in volume and synchronous.

The evidences was strongly in favor of an aneurysm involving the left recurrent.

Dr. Permewan said he was rather surprised to hear Dr. Wingrave in his description say that the cord was in extreme abduction. This would be a very unusual condition of things. To him the position of the cord was just the ordinary cadaveric position. He suggested it was a case of recurrent paralysis with a certain amount of swelling of the ventricular band concealing the cord.

Dr. Wingrave mentioned the fact that the left cord was extremely abducted when first seen, being completely hidden by the ventricular band. To-day one could see a little of it, but at the same time he felt that it was somewhat external to the cadaveric position.

A case of Bulbar Paralysis in a Female aged 23.

Shown by Dr. Wyatt Wingrave. The patient sought relief for a lump in the throat and difficult breathing" of fourteen years' duration, but much worse lately.

The voice was weak and articulation imperfect; she spoke indistinctly, as if her mouth were full. She suffered frequently with dyspnea on the slightest exertion, but worse during sleep. Deglutition was normal. The pupils are equal and react to light and

accommodation. The tongue was deeply fissured, red, and slightly tremulous, and its action feeble. There is well-marked facial palsy; knee-jerks are exaggerated.

The larynx showed both cords fixed in a position somewhat mesial to the cadaveric; leaving but a very narrow aperture. Tension was fair, but other movements wanting, with the exception of slight abduction in the right cord. There was a prominent sarcous-looking projection in the posterior commissure, and some slight peria-rytenoid swelling.

The mother's story was that she had enjoyed fair health, but that fourteen years ago a piece of slate pencil was removed from the right ear under chloroform, which was followed by face paralysis (right side).

She had five healthy brothers and sisters, and neither syphilitic nor tuberculous history could be obtained.

Mr. Tod said that the growth between the cords suggested fixation of the cords rather than paralysis.

The case had been under Mr. Hovell at the London Hospital, and there were some notes to the effect that there had been some disease of the crico-arytenoid joint. This referred to some years back.

Mr. Parker said he had seen this case at the Throat Hospital, Golden Square, some three months back. He then formed the opinion that the facial paralysis was probably traumatic, due to injury by a slate pencil in the ear; at any rate the paralysis was first noticed immediately after its removal under chloroform, when the patient was between seven and eight years old. Shortly after this the voice began to change, which led the mother to seek the advice of the late Sir Morell Mackenzie, since which time the patient had been taken to various laryngologists and various hospitals.

Dr. Lack said that one point of interest about the case was that the patient slept perfectly quietly, although she had dyspnea when walking about. He did not think she required tracheotomy.

He had seen a case of paralysis and wasting of the arm immediately following the administration of chloroform for a simple operation, and wondered if the history in the case afforded any support to a similar origin.

Dr. Wingrave said that the history of the patient was somewhat involved and unreliable.

She undoubtedly had facial palsy and weakness and tremor of the tongue, but the palate moved perfectly well.

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SELECTED ABSTRACTS.

Dry Fautitis and Bright's Disease.—JOAL.—*Revue Heb. de Laryngologie, D'Otologie et de Rhinologie*, April 19, 1902.

From the observation of a number of cases, the author believes faucitis sicca, when not dependent on nasal or naso-pharyngeal disease, should always direct the attention to a careful urinalysis. In this way the insidious approach of Bright's disease may sometimes be detected. It is even possible that the faucitis sicca may manifest itself before the appearance of albumen fat in the urine.

W. SCHEPPEGRELL.

Immense Osteoma of the Frontal Sinus: Operation; Cure.—DR.

DEPAGE.—*Revue Heb. de Laryngologie, D'Otologie et de Rhinologie*, March 1, 1902.

The case was a woman of twenty years, who had violent attacks of headache with vomiting, and continued pain in the head. A bony tumor could be felt in the upper part of the orbit; the eye was pressed downwards and presented exophthalmos. The sense of smell had disappeared. The vision was considerably diminished and the two pupils showed the characteristic stasis. By means of radiography a tumor, the size of a billiard ball, was shown.

During the operation, an opening in the bone had to be made twelve centimetres in height and eight wide, in order to remove the main parts of the tumor which had pushed back the meninges which now formed a part of its covering.

After extirpating the tumor, the wound cavity was as large as the fist; at its bottom could be seen the matted dura-mater, and the broken cerebral surface.

The operation was followed by no untoward results except a suppurative keratitis.

The tumor measured nine centimetres on one axis and five on the other. One part filled and dilated the frontal cavity, while a prolongation extended into the sinus of the opposite side. The weight was 238 grammes.

Even if there is no infection of the frontal sinus, the author recommends in such cases that it be left wide open, in order to prevent infection of the meninges by way of the nasal passages.

The patient has since resumed her usual occupation, but still suffers from epileptic seizures.

SCHEPPEGRELL.

Recurrence of Hyperplasia of the Pharyngeal Tonsil—DR. MAX CORKE (Breslau), *Archiv. fur Laryngol.*, Band XII, Heft 2.

The earlier endeavors to explain the recurrence of the hyperplasia after operative removal were directed to the existence of some constitutional peculiarity, such as scrofula. After that, the view was broached that the recurring adenoid was of a sarcomatous nature—a lympho-sarcoma. Such a structure is difficult to distinguish from lymphoid tissue under the microscope, and the fact that recurrences frequently occur with great rapidity seemed to give some color of truth to this view. However, it soon became evident that very, very few of these recurring tumors showed any of the qualities of malignant growths, and the view was abandoned. The next explanation was, that in cases where a recurrence occurred the operation had not been thoroughly carried out. It is very evident to anyone who gives the matter a moment's thought, that a thorough and complete removal of all lymphoid tissue is never accomplished. Small fringes and papillae are left, and some lymphoid tissue has inserted itself in the median line between the plates of the basilar fibro-cartilage. This latter cannot possibly be removed by the curette.

G. gives a very thorough study of the histology of the new tonsil as compared with the original one. In brief, the same histological elements are all present, but in the new growth are apparently hopeless mixed up and confused as far as their relative situation is concerned. Their original order is lost, and we see lymphoid cells, glands, epithelium and connective tissue welded into one confused mass. If the examination is made at a time when the new growth is still young, there will be found a great preponderance of connective tissue. Later on the lymphoid elements have crowded out and displaced the connective tissue, so that the characteristic appearance of a tonsil is restored.

One reason for the frequent recurrence of these growths is the extraordinary capacity for reproducing itself possessed by lymphoid tissue. The author is inclined to think that recurrences are much more frequent than is generally supposed. Indeed, he thinks that a new growth of lymphoid tissue always occurs, but that it may under certain circumstances not become hyperplastic as before, but only reach the normal, giving rise to no disturbances.

Another point made is, that in a good many instances the patient, discouraged by a return of the symptoms, loses faith in the treatment and is lost sight of, the physician believing that a cure has been effected.

VITUM.

The Immunization Treatment of Hay Fever.—E. FLETCHER INGALS, (Chicago).—*The Journ. of the Am. Med. Assn.*, June 28, 1902.

Statistical of 18 cases of hay-fever treated by the Holbrook Curtis immunization theory. Reasoning from the hypothesis that many cases are affected by both the golden rod and rag weed, a double preparation was employed instead of relying upon one. For the purpose of greater accuracy each patient was supplied with medicine from the same lots, the two fluid extracts being used in equal proportion, instead of Liq. Ambrosia, (Fraser), an unknown combination. The dose was taken 10 minutes before each meal, followed by water to obviate any tendency to gastric disturbance. Medicine droppers were employed graduated to equal 1 m. of medicine to 3 of water. Six minims (equal to 2 minims of medicine), were dropped into a capsule just before taking, or put upon lump sugar. The dose was gradually increased until the patient got 60 minims, (equal to 20 minims of the combined extracts.) Patients were directed to continue a week or two if the action was favorable; if no symptoms of the disease developed they were to discontinue, to be retaken if the disease manifested. They were also cautioned to watch for the special symptoms of hay-fever, and temporarily discontinue the drugs if they occasioned digestive disturbance.

Believing a local application would be beneficial, then was ordered R Resorcin gr. v; adrenal (Armour), (vel. adrenalin chlorid gr. ss); ac. boric, grs. xvi; aq. camphor. hot ʒiiss; glycerin ʒiiss; aquae dest., hot. q. s. ad. ʒii. Macerate 4 hours, then filter. Sig.: Use as spray to nose and eyes 5 or 10 times a day, when needed. At the close of the hay-fever season letters of inquiry were sent to 100 patients, 18 of whom responded. Twelve, or 67 per cent. assert that they were benefited by the internal remedies. In several the symptoms subsided to reappear with the discontinuance of the medicine, and subside again with its use. Thirteen (or 72 per cent.), believed they were benefited by the spray, while some found it deleterious, and one injurious even when it contained none of the fluid extract. Sixty per cent. of the whole were subject to asthma during the attack, and half of these were convinced that their relief or benefit was due to the internal medication. The rest were unaffected. Three (or 7 per cent.) were uncertain whether their benefit came of atmospheric influences, and an equivalent number were unable to observe any effect whatever.

F. C. E.

The author emphasizes the consideration that other pollens than the two experimented with produce hay-fever irritation, therefore the failure to cure in certain of these cases does not fairly contradict the theory. In some the dose must have been too small, yet stomachic disturbance contraindicated an increase. The eclectic claim that ambrosia is a hemostatic may account for the dryness of the nose in some cases, indicating that this is a useful remedy in hay-fever and other nasal diseases. Of these patients 50 per cent. attributed the disease to rag weed, 33 per cent. to golden rod, and 17 per cent to other things. The cases were of about the usual gradations of severity in an equivalent number.

The author declines any proprietary preparation of unknown constituency, such as Liq. Ambrosia, (Fraser), and was led to urge Parke, Davis & Co. to prepare standard fluid extracts. This firm has now put up chocolate covered tabloids of two sizes, each representing $2\frac{1}{2}$ minims of each extract, which they assert will be as efficient as a liquid preparation. The author is sufficiently impressed to urge further investigation.

F. C. E.

Temperature after Mastoid Operation—Analysis of 100 Cases.—

T. J. HARRIS, M.D. (New York).—*Annals Otol., Rhinol. et Laryngol.*, May, 1902.

The author's inquires into the significance of elevated temperature after the mastoid operation; whether it suggests an incomplete operation with retained pus or diseased bone, or imperfect asepsis; or is there a normally elevated post-operative temperature due to the causes which originally produced the temperature. His answers to these questions as made in these cases are appended:

1. Post-operative temperature of moderate amount is customary in mastoiditis.
2. The cause of it has not yet been definitely settled.
3. Without accompanying symptoms it is without special significance, and should not be a source of anxiety.

F. C. E.

Two Cases of Unilateral Deafness Due to Suppuration of Accessory Nasal Sinuses.—J. FRANK CROUCH (Baltimore).—*Jour. of Eye, Ear, Nose and Throat Diseases*, Jan.-Feb., 1902.

In both of these cases there was great loss of hearing in one ear with congestion of the membrana tympani. In one case tests showed that watch, acoumeter, whispered voice were not perceived, and bone congestion was greatly diminished. All the usual forms

of treatment of the ear were unavailing. Treatment of a suppurating maxillary antrum promptly relieved the aural symptoms, while neglect led to their return. They disappeared with the final cure of the antrum disease.

The other case was similar in nearly every respect, except that the sphenoidal sinus was the one involved. The treatment of the sinus was followed with the same relief to the ear symptoms.

EATON.

Somnolence Caused by an Ear Lesion.—W. G. B. HARLAND (Philadelphia).—*St. Louis Med. and Surg. Jour.*, May, 1902.

Harland remarks that this case is an unusual one, he not having been able to find any similar one on record.

A boy thirteen years of age complained of a tendency to sleep at all times. Without feeling tired or out of sorts in any way, he would go to sleep whenever his attention was not aroused by action. There was no vertigo, tinnitus, nausea, or headache. The only thing found after a careful physical examination was a small impaction of cerumen in the left ear. This was readily removed and a few drops of fetid pus found behind it, and the membrana macerated with a large perforation in the lower posterior quadrant. Within a day, without treatment, the unnatural sleepiness disappeared. Later, with any return of discharge the sleepiness also returned.

Harland is inclined to ascribe the symptom to either meningeal irritation from the absorption of pus, or possibly to pressure upon the labyrinth fluid.

EATON.

Intra-Tracheal Medication in Diseases of the Respiratory Tract.—

JOSHUA L. BARTON, M.D. (New York).—*The Jour. of Tuberculosis*, April, 1902.

An experience of seven years in this method of medication leads the author to heartily indorse it. In simple acute tracheo-laryngitis, tracheo-bronchitis, bronchitis, and asthma, when secondary to bronchial disease, a rapid cure may be confidently predicted. The author discusses in succession the commonly offered objections:

1. Interference with respiration.
2. Excitation of severe cough.
3. Can be used only by the laryngologist.
4. Has no thera-

peutic value. Considering the length, diameter and ramifications of the trachea, aggregating a respiratory surface in these tubes of about 130 square meters, that this large surface is covered with epithelium capable of absorbing liquid and gases, and furthermore, that the amount of liquid introduced is only about half an ounce, in drachm doses, it is evident that there can be no complete or serious stoppage of air, and its equivalent, oxygen.

The fear of cough may be dismissed in the knowledge that the remedies are dissolved in a bland, unirritating oily fluid as olive oil, glycerine, or petroleum. These do not irritate that portion of the larynx supplied by the superior laryngeal nerve, in the small quantity that comes in contact with the larynx, while the lower respiratory tract is made tolerant.

Special training for administration is unnecessary. An ordinary aspiratory syringe, to which has been fitted a curved endo-laryngeal tube seven inches in length, is all the apparatus required. The patient is required to avoid swallowing; keep the tongue well drawn out, and to take a deep inspiration simultaneously with the quick injection of the fluid. Its therapeutic value is in proportion to its power to fulfill one or more of the following indications:

To remove the cause of the disease; to modify its course; restore normal physiologic action; disinfect the diseased tract; add to the comfort of the patient. Acting under these indications the author does not contend that intra-tracheal medication is a "sure cure" for tuberculosis, but rather a powerful adjunct to other treatment.

F. C. E.

A Case of Acute Articular Rheumatism of the Crico-Arytenoid Joints.—WM. E. SAUER (St. Louis).—*Interstate Med. Jour.*, May, 1902.

The case is reported as of interest in that it presents a rare manifestation of a very common affection, the literature on acute articular rheumatism of the laryngeal joints not being extensive. The possibility of such an occurrence is mentioned in most of the larger textbooks, but the actual number of cases reported is small.

Sauer's case was that of a very fleshy woman aged forty. When twelve years old she had an attack of acute articular rheumatism involving nearly all of the large joints, and two similar attacks later, but not severe. Three months before Sauer saw her she had suffered for two months with pain in, and some swelling of the ankle joints. During the attack in the larynx there were, besides the

constitutional symptoms, stenotic breathing, aphonia, and pain in the throat, especially on swallowing. The laryngoscope showed the rima glottidis very narrow, the vocal cords and arytenoid cartilages immovable, but no evidence of any inflammation of the cords themselves. There was, however, some slight swelling and redness of the mucous membrane covering the arytenoid joints. External palpation of the larynx elicited sharp pains when pressure was made in the region of the crico-arytenoid joints.

The case yielded to salicylate of soda, a Priesnitz compress, and aspirin after five days of treatment.

EATON.

Observation on Seven Years' Use of Creosote in Pneumonia.—

J. L. VAN ZANDT (Fort Worth, Tex.)—*Southern Practitioner*, Dec. 1901.

After a large personal experience, and from the reports of various practitioners who have used the remedy, through his recommendation, the author concludes that by it: "A large per cent of pneumonic cases are cut short or aborted, almost all the rest are mitigated, and the remainder, a very small per cent, are not at all affected by the remedy."

Dose: Seven and a half to ten minims every three hours for an adult; in severe cases more frequently for a few times. As some of those who had reported had good results from smaller doses more frequently repeated the author surmises that this method may be the better one, and worthy of a more extended trial. Except in cases offering special indications the remedy is employed alone. Expectorants and nauseants are never prescribed.

F. C. E.

Diphtheria Treated With Antitoxin and Pilocarpin.—E. W.

SAUNDERS (St. Louis.)—*St. Louis Courier Med.*, April, 1902.

After several years elapsing since he published his observations on the treatment of diphtheria with antitoxin and pilocarpin, Saunders is strengthened in the position then taken that pilocarpin is a valuable adjuvant to antitoxin in the treatment of that disease.

He claims that the pilocarpin stimulates the excretion of the toxin, and excites the activity of the leucocytes. He feels that the death rate in America of 5 to 15 per cent can be markedly reduced. In the past seven years he has treated about 300 cases in private

practice, and in the Episcopal Orphans' Home and has not a single death to record.

He advises in all cases of exudate or pseudo-membrane in the fauces to administer pilocarpine in sufficient doses at once, to incite salivation, diaphoresis, etc. The antitoxin follows according to the best experience. If the case comes under treatment after the fifth day, pilocarpin should be used with caution, on account of the danger of heart failure. Even when the temperature drops to normal, (where the pilocarpin has been given early), and the membrane begins to cast off, the drug should be continued for one or two days in diminished doses.

F. C. E.

Cystic Hygroma of Neck. — ST. CLAIR THOMSON (*Lancet*)
March 2, 1901.

At a meeting of the Clinical Society of London, on February 22, Dr. StClair Thomson showed a woman, aged twenty-nine years, with a large irregular, soft swelling in the region of the upper half of the right sterno-mastoid. It was elastic and fluctuating, and was neither adherent nor inflamed. She was positive that the swelling commenced just before her marriage (at the age of 27 years), as a small lump on the right side of the neck. This increased during pregnancy, and became larger after her first child was born, in September, 1900. Mr. Bland-Sutton had stated that congenital serous cysts of the neck were "always noticed at or immediately after birth." Possibly, as they originated below the deep cervical fascia, the one in this case escaped notice until it had made its way through this membrane and had become superficial.

ST. CLAIR THOMSON.

An Epitome of the Subject of Rheumatism as Cause and Effect in Inflammation of the Throat. — WM. CHEATHAM (Louisville)
—*Med. Record*, Dec. 14, 1901.

Acute inflammation is an acute infectious disease, due to a type of streptococcus, found by F. Mayer, which he obtained from the tonsillar mucus cultures. When injected into animals it produces a local infiltration and necroses, but no suppuration, and after six or ten days, inflammation of the various joints occurs with a serous or sero-purulent exudate, with pericarditis, pleurisy, endocarditis, etc.

It is probable that this specific germ in rheumatic fever, enters the system at the tonsils or some other part of the naso-pharynx.

The most common varieties of rheumatic sore throat are faucial erythema (most common in adults), and rheumatic tonsillitis more frequently seen in children. The follicular type is that seen in the young, while quinsy is more common in older subjects.

The author's belief is that chronic rheumatism causes frequent attacks of inflammation of the tonsils, pharynx and larynx; that acute exacerbations in chronic rheumatism and acute rheumatism are frequently ushered in or preceded by an acute tonsillitis; that following these attacks we may have all the heart, joint and other lesions that we find in any rheumatic affection.

M. D. LEDERMAN.

The Treatment of Nasal Catarrh by the General Practitioner.

E. C. UNDERWOOD (Louisville, Ky.)—*St. Louis Medical and Surgical Journal*, July, 1901.

An enumeration of the several routine forms of nasal catarrh, and a plea for their treatment by the general practitioner. The author asserts his belief in the efficacy of hydrozone, in both the hypertrophic and atrophic forms. He asserts its germicidal and disinfectant qualities in the proportion of a 50 per cent solution, in distilled water, applied as a spray every three hours. This corrects the foul odors in atrophic catarrh, and is curative in mild cases of hypertrophic catarrh where no constitutional disease is present. In the latter contingency appropriate systemic medication is indicated. Cases in point are enumerated.

F. C. E.

BOOK REVIEWS.

Diseases of the Nose, Pharynx, and Ear. By HENRY GRADLE, M.D., Professor of Ophthalmology and Otology, Northwestern University Medical School, Chicago. Handsome octavo of 547 pages, profusely illustrated, including two full page plates in color. Philadelphia and London: W. B. Saunders & Co., 1902. Cloth, \$3.50 net.

There are several features of this volume which stand out pre-eminently, which the author has summed up in his preface succinctly:—"This volume is intended to present disease as the author has seen it during an experience of nearly twenty-five years. It has been the author's aim to answer in detail those questions regarding the course and outcome of disease which cause the less experienced observer the most anxiety in an individual case—questions to which an answer is not easily obtained from text-books."

The volume is neither a text-book nor a treatise, but rather a monograph containing the author's experiences in diagnosis and treatment. Some of the original illustrations are rather crude, but the majority are taken from the works of Politzer, Zukerkandl and Hajek. It is a meritorious work.

M. A. G.

Atlas and Epitome of Otology. By GUSTAVE BRUHL, M.D., of Berlin, with the collaboration of PROF. DR. A. POLITZER, of Vienna. Authorized Translation from the German. Edited by S. MACCUEEN SMITH, M.D., Clinical Professor of Otology, Jefferson Med. College, Philadelphia. With 244 colored figures on 39 lithographic plates, and 99 text illustrations. Philadelphia and London: W. B. Saunders & Co., 1902. Can also be obtained of Lewis S. Matthews, 219 N. 10th St., St. Louis.

From our point of view we are free to say that this Atlas is the most complete both as regards the minuteness and detail of the collection of specimens representing the anatomy and pathology of the ear and temporal bone, the beautifully executed illustrations, and the excellent and consecutive arrangement of the plates. Another feature which adds considerable value to this Atlas is the fact that the author had the co-operation of Prof. Politzer in the selection and arrangement of these plates, and that the wonderful collection of Prof. Politzer was placed at his disposal and was liberally drawn from.

The second part of this Atlas contains excellent and concise chapters on the anatomy and physiology of the organ of hearing, embryology and comparative anatomy, methods of examination, with very minute directions concerning functional tests, and a concluding chapter on pathology and treatment, in which special mention should be made of an excellent chapter on the technique of the radical mastoid operation and all of its accompanying sequelae. The text is much elucidated by numerous clear illustrations.

It is a wonderful clinical hand book, and almost a substitute for personal instruction in this field of work.

M. A. G.

A Manual of Otology. By GORHAM BACON, A.B., M.D., Professor of Otology in Cornell University Medical College, New York; Aural Surgeon, New York Eye and Ear Infirmary. With an introductory chapter by CLARENCE JOHN BLAKE, M.D., Professor of Otology in Harvard University. Third Edition, Revised and Enlarged, with 120 illustrations and 7 plates. New York and Philadelphia: Lea Brothers & Co.

Perhaps the best evidence of the popularity and acceptability of this manual, is the fact that the third revised and enlarged edition has been issued in so short a time. We consider Bacon's work the best working manual for the under-graduate in medicine, and as many of the plates and much of the text represents the author's personal and clinical experience, it must also be considered a valuable adjunct for the special worker in otology.

The new edition includes four full page half tones illustrating the microscopic anatomy of the organ of Corti, and of the cochlea and pathological changes in the mastoid bone.

Chapters on the significance of leucocytosis and lumbar puncture have been added.

We predict a long and popular career for this book.

M. A. G.

Progressive Medicine, Vol. II, 1902. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Octavo, handsomely bound in cloth, 452 pages, 5 illustrations. Per volume, \$2.50, by express prepaid to any address. Per annum, in four cloth-bound volumes, \$10.00. Philadelphia and New York: Lea Brothers & Co.

This volume of Progressive Medicine contains no chapters on otology and laryngology, but to those of our readers who are interested in ophthalmology we call attention to the excellent chapter by Dr. Edward Jackson. The other monograph which may be of especial interest to our readers, is that on diseases of the blood by Dr. Alfred Stengel, the most exhaustive and up-to-date review on Hematology which we have yet seen.

M. A. G.

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ORIGINAL COMMUNICATIONS.

(Original communications are received with the understanding
that they are contributed exclusively to THE LARYNGOSCOPE.)

SOME CLINICAL FEATURES REGARDING HAY-FEVER AND ITS RATIONAL TREATMENT.*

BY G. B. HOPE, M.D., NEW YORK.

The employment of the term "hay-fever" is in the generic sense, and has reference to the recognized symptoms commonly attributed to pollen.

Taught by the immature expressions of so many who have approached this subject from the physiological and clinical standpoints, it is the desire of the writer that his experience and conclusion should not be accepted at once in the light of an altogether new discovery, nor does it boldly promise in every instance a radical result.

During the past season of the hay-fever period a certain number of new cases have afforded a fresh opportunity to compare notes as to the various methods of treatment and their effects. Certainly, so far, no clear explanation as to the intrinsic condition upon which this disease depends has appeared, and perhaps it may be wise to add, such a didactic statement should not be too confidently received, owing to the various and indefinite elements that in exceptional examples serve to obscure an affection possessing so great a variety of subjective details. It is equally safe to premise that no morbid condition, medical or surgical, can assume to be positive in its descriptive details in every instance; nor is this thought to be necessary in order to establish a fundamental rule for action. "In scientific investigations," says Darwin, "it is permitted to invent any hypothesis, and if it explains various large and

*Read at the Annual Meeting of the American Laryngological Assn., Boston, May 26, 1902

independent classes of facts it rises to the rank of well grounded theory."

In the main, excluding a very minor number of cases in which a purely neurotic condition is at fault, that is connected with other reflex disorders and independent of any structural alteration that can be appreciated, it is the intention of this paper to call particular attention to an abnormality of the middle turbinated bone and its covering tissues.

It is ever stated with an emphasis born of long habit, that in the chain of hay-fever are the three imperative connecting links, viz.: the predisposing constitutional or neurotic state, the exciting irritant cause of whatever nature—whether pollen, dust, or atmospheric, prevalent at a certain season, and thirdly some physical alteration of the intra-nasal structure. These three increments constitute the tripod upon which rests whatsoever is claimed to be the association between cause and effect so far as a physical appreciation of hay-fever is concerned. Otherwise it is asked how comes it that a removal from the field of its invariable influence is accompanied by an immunity, or possessed of the identical surrounding a more vigorous physical habitude will serve to cut short a disposition of long standing? These questions however answered would appear at first sight to lead to an inevitable conclusion as to the mere accompanying value of a local intra-nasal abnormality, unless one is careful to give to each matter its proper place in the scheme of a purely predisposing element such as is familiar in a greater or lesser degree to all diseases.

The turbinated bodies normally sensitive to vaso-motor excitement, are in some individuals curiously responsive to mental states, as is illustrated by two examples cited by the later Sir Morrel Mackenzie and Dr. John Mackenzie, of Baltimore. In the first a patient was seized by an attack of hay-fever after witnessing a highly realistic painting representing a hay gathering, and in the second where the exposure to a collection of artificial roses to a woman subject to rose cold was sufficient to establish an immediate intra-nasal congestion. Other approximate instances are sufficiently commonplace in the histories of hay-fever that relate to exact time periods of attack to cause many patients to distrust propositions to anything that may have the sound of a minor surgical operation, and leads them to seek their salvation in a climate free from the germ they have learned to be the ingredient of their distress.

The proposition that appeals to the physician is to outline a curative treatment that will allow a normal state of health to prevail notwithstanding the exposure to whatever form of pollen or irritant may commonly induce the attack. Certainly no healthy nostril should afford a resting place for the development of infection, or readily respond to extremes of vaso-motor disturbance.

The inferior turbinated appears to have received the major share of attention in the past as the offending body, and unquestionably often has been sufficient to influence indirectly the necessary irritation underlying this affection. Following the removal of its fullness by means of the cautery or snare, or the riddance of projecting spurs of the septum, irritating contact has given place to temporary and frequently to complete immunity from the periodic hay-fever attacks. In the majority of instances unfortunately the relief has not been so satisfactory, showing that in addition there have been irritable areas unnoticed and untouched. Occasionally local spots on the septum have been suspected to be the starting points in the formative career of the disease. These have received a like cautery application but without producing a result sufficiently encouraging to give much hope for anything tangible in this direction. All these surfaces are undoubtedly important as approximating a normal and unembarrassed nostril, without which the best conditions for an absolute relief could hardly be expected. Infinite antiseptic, astringent, alterative, washes and pigments have been employed with indifferent success. Such, then have been in the hands of the majority the selective treatment. So far as the theory and as far as the practice has gone, ground has been gained; many sufferers have been radically cured, more have experienced a partial but substantial relief.

The middle turbinated differs essentially in structure and function from the inferior. Constituting a considerable share of the ethmoid, these bodies stand in immediate relation to the floor of the brain; its mucous membrane is vastly more delicate and sensitive, its prescribed space is narrowly restricted and any increase in size or deviation from the normal lines brings it in contact with unyielding boundaries with accompanying pressure and obstruction to ventilation and secretion. Its thin walls easily give way to processes of inflammation with surface hyperplastic development that must react on the deeper structures composing the ramification of cell cavities. The frontal, ethmoidal, sphenoidal cells are closely influenced by any abnormal activity. Its nerve supply is

largely independent to itself and includes sympathetic branches derived through the carotid plexus. With the distribution of the olfactory, each filament is surrounded by prolongations from the dura and pia mater extending to the periosteum. It is consequently not difficult to attribute through these various anatomical conditions a wide range of symptoms such as are conspicuous in the histories of the disease in question.

As a dominant function the upper nares preside over the olfactory sense. All sapids, excepting the bitters, sweets and acids, are appreciated through this area. Aside from prolonged exposures to irritant solids or gaseous emanations, mental emotions, sexual excitements, eye reflexes, heat, light, play no small part in disturbing a vascular equilibrium. The increased inspiratory effort when the normal canal is contracted, as in the instances of hypertrophy of the inferior turbinated, or from septal deviations or exostoses, must convert this auxiliary meatus into a new and improvident functional career. Hence one explanation for the results attending the removal of these obstacles is that a proper respiration is re-established, and at once a predisposition to hay-fever is proportionately eliminated, notwithstanding the middle turbinated remains unchanged. The prevailing irritants are no longer carried through the same channel to remain impacted against this sensitive surface. It may be suggested in passing that the middle turbinated is placed nearly two inches distant from the external meatus and somewhat over an inch beyond the anterior tip of the inferior, as though apparently protected against inordinate exposures. Again, a nostril that is permanently and effectually plugged, as by large polypi, is rarely effected with the full symptoms of hay-fever—inasmuch as no air passes within, no external irritant can be drawn with it to excite acute inflammation of these structures. Other symptoms, however, are likely to prevail which are more or less germane to the subject, and concerning which much has been written suggestive of a phase of vasomotor derangements. I refer to the relation of asthma to nasal polypi and also hay-fever. Here, too, opinions are somewhat at variance and perhaps somewhat vague, I cite from H. L. Swain: "Shall we consider that the nasal condition produces the asthma—cause and effect—or are both the outcome the result of some depraved condition of the general system which has outward expression of these two diseased conditions?" It is not proposed to take up this issue in the present discussion beyond declaring

the belief that, as an accompanying feature of hay-fever, its determination is as clear as that of the underlying intra-nasal affection itself.

Since 1819, when the first descriptive account of hay-fever was published, by Bostock, up to the time of Blackley, '73, and Beard, '76, the pollen theory appears to have been that most generally accepted. With Pierrie, '67, and Beard came the additional emphasis relating to the subjective state of the patient as impelled by a neurotic disposition. Daly, Hack, and Roe about the same period, '82-'83, began to point to an intra-nasal abnormality as a necessary complement. In '84 Morrel Mackenzie, after carefully summing up the various theories and fortified by his personal experiences, declared unhesitatingly that "pollen is the essential factor in the case of those who possess the peculiar predisposition." Concerning the combined causes, viz., heat, light, dust, ozone, ben-zoin, over-exertion, he proceeds to add: "Several writers have contended that although any one of the above causes may not alone be sufficient to produce hay-fever, several of them acting together may be able to do so. Such theories are the last resources of those who are unable to discover the true etiology, and there is not a little of evidence in their support."

If it is remembered that, practically, it has been hardly twenty-five years since pathological states of the nasal organs have assumed a wider significance, it is realized how impossible it has been to the earlier students of this affection to reason as to cause and effect principles in a manner that should be convincing. So it is that with the three assumed cardinal necessities—that of external surrounding, the central nervous system, and some indefinite local state, the attention has been so greatly distracted as to open the way to discussions that are endless in their variety and to a conclusion as yet unformed. Beard in his day was ready to acknowledge that there was no individual pollen that would arouse this disease into activity; consequently there were idiosyncrasies so multiple as to include dusts of many descriptions combined with weather conditions to make them potent. At the present this is not contradicted, but as if to render the field still more subtle, with an unclassified neurotic state is now frequently combined a gouty or rheumatic disposition. In other words it seems necessary to spell out a causation that will meet the requirement of each class of cases, but lacking in any general rule under which a specific action could be taken.

If it is true that the entire principle of hay-fever resides in an acute inflammatory process of the middle turbinated structure, and if this susceptibility to the influence of external irritants may be removed, the scrupulous avoidance of pollen and the constitutional remedies addressed to the nervous diathesis will easily have passed into a category of things of an altogether secondary value.

When so important an issue is at stake and where substantial proofs may be most difficult to furnish at the outset, it is clearly the part of prudence that one should be sufficiently confident of one's ground before venturing to pronounce decidedly in a matter that has vexed for so long many and the most careful observers. It is possible that others have trodden the same path before, but judging from the discussions that followed a paper on this subject at the last annual meeting of the society, I make bold to appropriate the definite views as expressed in this communication.

Originally rather accidentally, but within the last three years more systematically, the writer was led to devote particular attention to symptoms believed to originate in hypertrophic conditions of the middle turbinated. As is well known hypertrophy here is common to patients who bring their ailments to the clinics of a special hospital. When this state is sufficiently advanced and not greatly complicated by other obstructive lesions, without too pointedly questioning, it is found that there is generally a feeling of stuffiness often amounting to a sense of pressure, a frequency to head colds with frontal pains, the voice lacks a true resonance and there is unmistakable evidence of impeded functional activity. In the development of a somewhat acute stage the symptoms become marked; the irritation is out of proportion to the ordinary so-called cold, the hydorrhoea is more extreme and viscid and bathes the upper nasal region; a dry cough frequently eventuates—in fact the local signs begin to approach more closely to those of genuine hay-fever. Stimulating applications are said to burn like fire and do not produce the speedy reduction of the swollen erectile tissues, but if anything appear to aggravate the discomfort. In addition the tracheal wall will often exhibit a redness easily appreciated. In short this picture might stand sufficiently well for hay-fever of a minor degree were it not that the attacks are not periodic nor occurring at a suitable season, nor running an equal time limit. For all that I take it that the process is identical and only modified by subjective variations that tend to intensify and prolong the term of acute inflammation. In another instance a con-

dition of perennial congestive activity, simulating in almost every detail the periodic type, is occasionally witnessed. Surely here no pollen theory, nor properly speaking, a neurosis can be introduced to satisfy the time-honored theory of causation. As an illustration the following history is introduced: Three years since a patient, a woman about 40, living in the country, was referred to the Metropolitan Throat Hospital by Dr. Fayette Smith, of Newark, with the statement that in his attendance upon her he had included of pretty nearly every method recognized in the vocabulary of treatment, and at the end of his resources he had delivered her into our hands. In the patient's language her state was beyond compare. During the preceding two years her condition at the best was wretched enough, but with the exacerbations almost unsupportable. Occluded nostrils, throbbing frontal pains, lachrymation, hydrorrhea, violent sneezing, with asthma superadded were all in active evidence at her visit. It was with the greatest difficulty that a satisfactory examination could be made, owing to the rhinal congestion. A sufficient but not great hypertrophy of the middle turbinated was brought into view developing in each nostril. In every direction this case appeared to answer to the periodic hay-fever history, excepting in the continuousness of the suffering and of course lacking in the usual exciting causations. The anterior portion of the middle turbinated was removed from the side most occluded, and on a return visit a few days later the patient expressed herself as having received a relief almost magical; her asthma having largely disappeared and the nasal trouble vastly relieved. Some six months later on a moderate recurrence of the symptoms, the opposite nostril was subjected to the same operative treatment. In a recent interview the writer was assured that her former disabilities had radically disappeared and further advice was considered unnecessary. As an incident it should be added that the greatest suffering was experienced during the period recognized as the usual hay-fever term.

An additional case, contrasting somewhat with the above, but equally striking in its intensity and apparent relief, is cited: Mrs. S., referred by Dr. R. O. Born, of this city, a lady of highly nervous temperament, called at a late hour of the evening, impelled by suffering that had passed beyond endurance. The distress from the pain, eternal sneezing and hydrorrhea was such that she had no rest by day, and at night sleep was rendered impossible. These symptoms had progressed increasingly during several days. A

small, fleshy, intensely red tongue of hyperplastic tissue, movable by a protected probe was visible projecting from the middle turbinated of one side, the other being pretty nearly of a normal. As she expressed a decided dread of operative interference, a small pledget of cotton moistened with a cocaine solution was placed lightly against this turbinated in the hope of gaining some temporary benefit. Two days later, having failed to acquire much relief from continued treatment of this character, the patient permitted the use of the snare with which the anterior face of the middle turbinated was removed. Within twelve hours the intensity of the attack had begun to subside and in the sequence a rapid and entire disappearance of all disturbing symptoms. It is seen that between the chronic perennial and the acute paroxysmal there are but few marks of history variation, unless, perhaps, the additional liability to asthmatic complication is considered an accompaniment not unusual with the former.

In addition to a considerable number of cases somewhat loosely classed as chronic vaso-motor, in all more than twelve cases of typical paroxysmal hay-fever of every grade of severity have been subjected to the test of this operation. With some few it must be confessed that the results have not been attended by absolutely brilliant success, but in every instance a most positive benefit has followed, and in the larger proportion a practical immunity has been secured. If some disappointments may have been felt in a failure to obtain ideal effects in each case, it is most firmly believed that the fault has arisen through the inability to complete the full intention of the operation, owing to a difficulty in gaining a visual field in nostrils greatly contracted. It has happened in several instances that at the time of operating no view whatsoever of the turbinated could be secured, although the surmise of hypertrophy was amply demonstrated by the result. As an emphasis, the treatment has not been in any way confused by the administration of other local or constitutional remedies.

So far, then, within this experience, there has been no exception where the presence of hay-fever has not been associated with middle turbinated hypertrophy, and the removal of which has seemed to demonstrate clinically a most decided arrest in the chain of vaso-motor excitement. It is unnecessary to speculate concerning the rôle played by the pollen theory, if by ablating the morbid structure to which it is responsive, no unusual liability to inflammatory action will ensue. I find, moreover, in some quarters, a

disposition to inquire more determinately into the traditional causation so open to laboratory investigation. Without comment I quote from the following extract: "During the past few years the pollen theory of hay-fever has attracted considerable attention and many adherents have been added thereto. In this connection the recent work of B. Heyman and T. Matzuschata (*Zeitschrift für Hygiene u. Inf.*, Nov. 22, 1901), is of interest. They first inquire into the quantity of pollen particles in the air during the season of the year when hay-fever is prevalent. They found only a very small number of such particles are present in the air; in the average of 25 to each cubic meter. The bacteriological examination of these particles shows that they contain only a very small number of micro-organisms. Only from one to five organisms are present in the pollen from one blossom. They next examined the nasal and throat secretions of healthy persons, hay-fever patients, and individuals suffering from various other affections. The hay-fever patients showed less pollen in such secretions than any other persons examined. With respect to the micro-organisms present, they found that staphylococci predominated in the nares of persons suffering from other nasal affections, while in hay-fever patients streptococci were most abundant. They conclude that the pollen theory of hay-fever is untenable. They are undecided as to the bacterial excitement and mode of transmission."

While progressing in the lines of the operative indications the snare alone was depended upon to secure the ablation of the hypertrophied tissue. If a portion of the bony structure of the turbinated was included it was thought not to be a disadvantage. Owing to difficulties of conformation or lack of skill, the results were occasionally clearly insufficient, and although yet the wire loop is invariably employed as a preliminary, seizure forceps are considered indispensable to complete the radical removal of all hypertrophy. The bone is denuded throughout its presenting surface quite to the angle formed by the cribriform plate. Unless carried beyond this point the matter is essentially simple, requiring a few moments only, and under cocaine and adrenalin practically painless and bloodless. The exceptional instances where the turbinated itself is strongly deflected, laminated, or cystic, must be dealt with after the manner that would appear advisable under the circumstances to insure a freedom from contact. In a like sense the thickened tissue along the sides of the turbinated, if necessary, to the same purpose should be removed. These additional steps, however, would seem rarely to demand attention. It is a cautionary suggestion that the operator may have himself to blame for a failure where the error will easily lie in an absence of thoroughness in securing the purpose for which the operation is effected. In the place of the hypersensitive and erectile, a cicatricial and firm tissue furnishes a protective covering that should remain immune to ordinary causes of irritation.



AN OPERATION FOR THE CORRECTION OF DEFLECTIONS OF THE NASAL SEPTUM.*

BY E. B. GLEASON, M.D., PHILADELPHIA.

Clinical Professor of Otology at the Medico-Chi College, Laryngologist of the Philadelphia Hospital, Surgeon in Charge of the Nose, Throat and Ear Department of the Northern Dispensary, etc.



When an operation for the correction of a deflection of the nasal septum results in failure, the history usually is that immediately after the operation, the septum was in the median line, but that gradually the parts sprung back into the former abnormal position as the result of the resiliency of the septal cartilage.

In October of 1896, an operation was described by me: Probably still the best method of counteracting the resiliency of the septum; the main cause of failure in all operations for the correction of deflection of the nasal septum.



The operation consists of a -shaped incision around the deflected area. The vertical Crura of the  are made as long as possible, in order to take advantage of the leverage which the resiliency exerted at the neck of such a quadrelateral flap has to overcome in order to spring the lower edge of the flap back into its former abnormal position.

This very important principle of leverage may be demonstrated practically by flaps of various shapes cut in the side of a rubber ball or sheet of India rubber, because the resiliency of the septum is comparable to that of India rubber. It will be seen that when a quadrelateral flap is long and narrow, that it will remain almost without support in any position into which it may be thrust by the finger; while a short wide flap springs back into its former position as soon as the pressure of the finger is released. It will be demonstrated also that the rule that—the longer the flap the less the resiliency at its lower edge—does not apply to triangular flaps, because the width of the neck of a triangular flap, increases with its length, and hence the tip or angle of even a long triangular flap cut in India rubber or septal cartilage, when bent, springs back into its former position immediately that the pressure is released.



*Read by request before the section on Laryngology, Rhinology and Otology of the Medical Society of the County of Kings, Brooklyn, N. Y., May 22, 1902.




In traumatic deflections when a -shaped incision is made about a deflected area in a septum, the original traumatism in a large proportion of cases is practically reproduced, and it is almost the same as if there was a recent dislocation to reduce. It is not exactly the same, because during the years that the cartilage has remained dislocated it has assumed a new shape, and hence when the deflected area is reduced or set into its normal position its resiliency tends to spring it back into its former abnormal position. However, during the years that the triangular cartilage has remained dislocated new tissue has formed which represents the so-called redundancy of deflected septa, so that when the quadrelateral flap is pushed through the septum into the median line, this redundant tissue overlaps the edges of the -shaped incision and serves the purpose of a splint which is adequate in rather more than 80 per cent of cases to maintain the formerly deflected area in the median line during the healing process. During the healing process this new tissue disappears gradually, as the result of absorption and pressure neurosis; therefore, it is rarely necessary to cut away any of the redundant tissue. In practice, I cut away at the time of the operation or shortly afterwards a portion of the redundant tissue only in cases where it is sufficiently great to entirely occlude the formerly unobstructed nares.

What has been said above as to the disappearance of redundant tissue also applies, to a considerable extent, to lesser and irregular deflections of the septum after the main deflected area has been brought into the median line. The condition of such areas either improves spontaneously as the result of adequate breathing space, or, if pressure symptoms persist they are readily dealt with by removing a portion of the septum with a saw or by using the snare or galvano-cautery upon a hypertrophied turbinate. However, if necessary, trifling modification of the operation may be devised to meet unusual cases. For example, I am attending at the present time a man whose right naris is nearly occluded by a deflection of the anterior portion of the septum extending back three-quarters of an inch. The left naris posterior to this deflection is greatly narrowed by a bulging of the septum toward the left. I attempted by a pulmonary operation, to improve the condition of the left naris by sawing away a portion of the bulging area and have made matters worse, as the result of a bridge or *senechia* that has formed between the septum and inferior turbinal. This *senechia* has been treated by the insertion of a strip of rubber between the turbinal and the



septum, with the usual unsatisfactory result. When the deflection of the septum into the right naris is operated on I shall make my  incision in the usual manner. Before thrusting my quadrelateral flap into the left naris, I shall push my fingers into the left naris, and bring the posterior portion of the septum into the median line by fracturing the posterior edge of the  shaped incision. Then when the quadrelateral flap is pushed through the septum into the left naris it will hold the posterior portion of the septum in the median line, and no tube or other support probably will be required in the left naris.


The technique of the operation is as follows:

A saw is introduced flatwise into the obstructed naris, and a cut is made horizontally beneath the bulging area until the saw has penetrated somewhat deeply into the bone and cartilage. The direction of the saw is somewhat rapidly changed nearly to the vertical, and the sawing continued until a gush of blood indicates that the septum has been penetrated. The tip of the saw is then thrust through the opening in the septum, and the anterior crux of the  shaped incision rapidly made by sawing upward with the tip of the saw. However, the anterior crux of the incision is sometimes advantageously made with a knife. In fact, the whole incision might be made with a knife. The advantage of the saw is that at the base of the deviation the hard bony nasal processes of the superior maxillary are generally encountered, and are more easily penetrated by a saw than a knife; while the cartilage through which the anterior crux of the  shaped incision passes is equally well cut either by a saw or a knife.

After the anterior crux and base of the  shaped incision about the deviation has been made in the manner described, a short, probe pointed double-edged knife curved on the flat, is thrust through the cut in the septum from the right side (patient's left naris). The forefinger or little finger of the left hand is then introduced into the patient's right naris, so that the probe point of the knife rests on the tip of the finger. Finger and knife are now thrust backward through the nose, so that any tissues at the base of the  shaped incision that have escaped the saw are severed until the posterior border of the deviation is reached. One edge of the knife is now turned upward, and the posterior crux of the  shaped incision made as high up as possible upon the septum. The posterior crux of the incision is usually through bone, and it is necessary in order to sever it, to employ lever like movements of the knife, the tip

of the finger within the left naris on which the probe point rests, acting as a fulcum.

The -shaped incision about the deflection has now been completed, the whole procedure occupying less than one minute. It yet remains to thrust the deflected area through the septum. If Senechia exists they should be broken down with the saw, which is best done immediately before making the  shaped incision. The forefinger, in children the little finger, of the operator is dipped into steril water and introduced into the patient's obstructed naris. For the left naris the right forefinger is employed; for the right naris the left forefinger. With a semi-rotary motion the finger is passed into the naris beyond the deflected area. If as the result of defective technique the posterior crux of the incision has passed through instead of beyond the deviation the posterior edge of the incision is broken and dislocated into the median position. The finger tip is then thrust beneath the quadrelateral flap into the other naris, and brought up along first the posterior and then the anterior crux in order to ascertain that the edges of the quadrelateral flap have cleared themselves to the full extent of the incision. An effort is then made to break the neck of the flap by pressing the fingers violently upward beneath it. If there be bone in the neck of the flap, it breaks with a snap sometimes audible across a large room, and the operator may feel assured of the success of his operation; because broken bone not only remains where it is placed, but acts as a splint for the cartilaginous portion of the neck of the flap which always it is impossible to break.

This manipulation of the flap with the finger tip is of the utmost importance, and I depend rather upon it for the success of my operations than upon the support produced by the overlapping of the edges of the quadrelateral flap which is only adequate to prevent a reproduction of the previous condition after the most thorough bending of the flap. As for any incidental beveling of the edges of the  shaped incision, as a means of increasing this support, it as of so little consequence as to scarcely deserve mention.

If there be any advantage in my operation over others, it is because there is only one flap to bend, and that is so situated that bone is usually encountered in the neck of the flap which can be fractured, or if the deflection is so situated as to permit, the posterior suture of the triangular cartilage may be dislocated, and the resiliency of the neck of the flap suspended during the healing pro-

cess. Under such circumstances, the edge of the flap is anterior, and its crura nearly horizontal.

After the deflected area has been brought into the median line, the patient is requested to blow the clot from the formerly obstructed naris, and a tube is dropped into the naris. It should fit very loosely. In more than 80 per cent of cases it is allowed to remain only over night to control hemorrhage rather than as a splint. I prefer the modification of Allen's tube made by myself, but the tubes of Kyle or Meyer are equally practical, and the matter is of no consequence whatsoever when the tube only remains in the nose over night. If I were certain at the time of operation that more support would be required than that afforded by the overlapping edges of my quadrelateral flap, I should follow the teachings of Roberts, Seiler, Watson and Gibb, and employ a pin rather than a tube; because when support for a length of time is required the pin causes far less suffering than the tube. The same is true of a stitch.

All of my operations for deviation of the nasal septum were done under cocaine anaesthe, most of them in my office at night at the conclusion of my evening office hours: After the tube is inserted, the patient is simply instructed to call at my office in the morning. The tube is then removed, both sides of the nose cocainized, inspected and sprayed with menthol-camphor-alboline. If there is the slightest tendency at this or subsequent visits for the deformity to reproduce itself, the tube is reinserted and worn as long as necessary. This wearing of the tube in the few cases in which it is necessary, causes vastly more distress and inconvenience than the original operation. At the end of about two weeks the patient is instructed to attempt the removal, cleansing and reintroduction of the tube for himself. If, under such circumstances, the operation is a complete failure, it is the result largely of the patient's neglect. After the third week, the tube should be worn for half an hour or so twice a day for two or three months. Many of the "tube cases," while entirely satisfactory to the patient, inasmuch as adequate breathing space has been secured, are not entirely successful. By an entirely successful operation, I mean one in which six months after the operation the entire septum is as true to the median line as if it had been placed there with a plummet, or if there be any deviation it is toward the formerly unobstructed naris. In one of the cases shown at the section of Otology and Laryngology of the Philadelphia College of Physicians in 1896, when I read my first paper on this operation, the deflected area of the septum was some-

what toward the formerly unobstructed naris. Two or three years afterward, the entire septum was exactly in the median line. To bring about this result, the resiliency of the septum must have been active for a long time. In two of my "tube cases" the result was sufficiently unsatisfactory to necessitate the reproformance of the operation. I have heard of others that have passed from my observation soon after the operation where the failure was more or less complete. It should be born in mind, however, that "tube cases" comprise less than 20 per cent of the cases operated on.

The most satisfactory cases are those where the obstruction of the occluded naris is complete, because in such cases there is abundant redundant material to serve as a splint. The operation is more satisfactory in cases where the deflection extends well back upon the septum, because the neck of the quadrelateral flap then usually contains bone. For the same reason the operation is more satisfactory in mature adults than in young adults and children. The septal deviation of children are almost all "tube cases."

In contrast to deflections involving a considerable area of the septum, are the so-called vertical deviations, where less than a half inch of the anterior portion of the septum is involved, and consequently the deflected area can be converted into a very long narrow flap. In such cases, because of the powerful leverage, the resiliency at the neck of such a narrow flap has to overcome in order to bring the lower edge of the flap back into its normal position. It is only necessary to push the flap through the septum without thoroughly bending the flap. In such cases, Myles has modified my operation by preserving intact the mucous membrane of the concave side of the deviation.

The accidents at the time of the operation or subsequently have been few and unimportant. Hemorrhage in a few cases has been so abundant as to necessitate packing both sides of the nose with cones of absorbent cotton saturated with peroxide of hydrogen, instead of inserting a tube. I have observed two cases of secondary nasal hemorrhage each about one week after the operation. There have been two cases in which there was a small perforation so far back upon the septum as to cause no symptoms, and somewhat numerous cases in which a small particle of bone has come away, probably a portion of the nasal process of the superior maxilla. A slight rise of temperature, and some sore throat due to mild sepsis has occasionally occurred about the third day after the operation; but has quickly subsided in all except one case, where the frontal sinuses were evidently involved, and frontal headache persisted for some months.

A SIMPLE METHOD OF CORRECTING CERTAIN DEFORMITIES OF THE NASAL SEPTUM.*

BY GEORGE FETTEROLF, A.B., M.D., PHILADELPHIA.

The pathology of deformities of the nasal septum can be expressed in two words: Redundant tissue. Were there no excess of tissue, there could be no deformity. The term redundant tissue is here used in its strictest sense, and signifies more tissue than is necessary to give us a septum which runs in a straight line from margin to margin. In many forms of disease the systematic writer finds difficulty in accurately classifying, and his truth applies in all its fulness to the nasal septum and its malformations. With this reservation in mind the following classification appears to the writer to cover the situation from the practical standpoint:

1. Deviation without thickening.
2. Deviation with thickening.
3. Thickening without deviation.

1. Deviation without thickening. From a strictly accurate point of view this condition rarely exists, for when the septum leaves the midline there is almost certain to be developed a greater or less degree of irritation or inflammation on either the projecting or the receding surface, which results in hypertrophy of the displaced tissue. There is likely also to be thickening at the lines where the displaced portions join those segments which still remain in the median nasal plane. From an operative standpoint, however, this condition is found in a not inconsiderable number of cases with which we have to deal, and variations are found all the way from the slight concavo-convex septum, which causes few, if any, symptoms, to the extreme angulation or curvature which brings the convex side in contact with the outer nasal wall and causes absolute atresia of that side. In some of these cases the upper and lower portions of the septum are properly placed, and the offending region is in the middle. In others the upper four or five-sixths may form a plane which lies at an acute angle with the normal plane of the septum, and which joins the lower one or two sights

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at an obtuse angle. In others the lower portion is in its proper position, but the region opposite the middle turbinal and upper part of the inferior is out of place. In still others we find the double curve.

2. Deviation with thickening. In this form the most common varieties met with are an angular condition, with a marked ridge on spur at the angle, and a concavo-convex deviation with a general thickened condition of the displaced portion.

3. Thickening without deviation. This group comprises those septa whose cartilaginous lamellae have separated, and that numerous class of spurs, ridges and irregular protrusions.

The result of a rather modest experience in straightening septa has shown me in the first place that there is no one operation suitable for all cases. In the second place, I have learned that the most difficult cases to remedy are those included in the first and second classes, (for the latter can be converted into the former by removing the projecting growth), in a word, those septa whose antero-posterior or vertical measurements are greater than straight lines connecting their margins and whose surfaces are approximately parallel.

The difficulties or problems to be solved can be briefly expressed, as follows:

To get the septum over to the middle line, and to keep it there. In order to get it over to the midline there have been suggested numerous methods which can be grouped under three headings, crushing operations, flap operations and resection operations. The most widely used of these are the Meyer-Asch flap operation, the Watson-Gleason flap operation, the communicating operation of Roe, and the communicating operation of Kyle, in the last of which the pulpectomy is aided by knife or saw cuts into the septum, thus converting it into soft strips which can be readily pushed over or beyond the midline. While these have scored brilliant successes, and have been advocated and practiced by many, there are still a number of failures which cannot be ascribed to faulty performance.

To get a septum over to the desired median position is usually a simple matter; a few saw, knife or scissor cuts, a flap or flaps pushed over, or the septum crushed and the result is accomplished. Our retentive apparatus is satisfactory, particularly since the introduction of malleable tubes. My experience has been that in a certain proportion of cases for a while after the operation all goes well. Then, in a week or so, the patient begins to complain of pain, or the

tube shows a tendency to project from or into the vestibule. We look into the nose and we notice that our flat surface is becoming convex again, that a marked concavity is beginning to develop on the previously concave side, and that what seemed so brilliant a result on the operating table is not so satisfactory after all. The septum has begun to regain its vitality and become firm and is healing into its original condition. This tendency to return is blocked by the nasal tube, which is now fulfilling an improper function, that of a pressure apparatus, and not a retentive splint. Or perhaps the tendency to return is delayed for a time, and does not manifest itself until the splint is finally removed. The trouble is that we have too much septum for the space. *We have a ten-foot partition and a nine-foot ceiling.*

We can safely say that the seats of resistance to a permanent median position are three in number, the two marginal attachments of the septum and the most prominent point of the deviation. Even in those cases of mine that have been either partial or absolute failures, I know that I have broken up the marginal resiliency, and I feel sure that the result would have been good, but for the fact there still remained too much tissue at the point of greatest deflection.

Another point. I think that all will agree with the statement that the less cutting or crushing of the septum there is done, the better chance is there of retaining vitality and less likelihood is there of perforation or of the formation of inflammatory exudate, which would only add still more to the excess of tissue. And, if while straightening the septum we can keep intact the muco-perichondrium of at least one side, we will have retained a structure that is of value both as supplying nourishment and as forming a splint. We come naturally, then, to the conclusion that an operation which will remove redundant tissue, which will necessitate a minimum of laceration, and which will not affect the muco-perichondrium of one side, has certain undoubted advantages.

The main difficulty I have experienced has been in removing the excess of tissue. The quota of cartilage or bone, or of both, to be removed, must naturally be larger on the convex side than on the concave, and its removal necessarily results in a V-shape gutter. Kyle, in his book, suggests removing a V-shaped piece in deflections of the cartilaginous septum, and recommends dissecting up a flap of mucous membrane, and by means of two converging knife cuts, excising a strip which is removed by a blunt dissector or by

the finger nail. This strip I was unable to remove satisfactorily, either as regards the angle of the V or the depth to which it should go, and when the deviation included the bony septum, I was unable to do it at all. I therefore devised a little saw-file for accomplishing the purpose, a description and cuts of which were published in *American Medicine*, March 1st, 1902. These instruments I take pleasure in showing. The description is quoted from the afore-said article:

"The instrument may be called a saw-file, as it comprises the elements of both a saw and a file. The edge is curved, and consists of a series of teeth, half of which cut when the instrument is pushed, and the other half when it is pulled. These teeth are prolonged up the sides, which are curved on the flat, and which consist really of a series of planes, the distal half cutting when the instrument is pushed, and the proximal half when it is pulled, similarly to the edge. The back is smooth and flat, with rounded edges.

As the amount of tissue requiring removal varies in different cases, the instrument is made in three sizes, the cutting sides meeting at an angle of 40° , 55° and 70° , respectively. In the first two the distance between the back and the tip of the most prominent tooth is 5 mm. The one of widest angle is required where the deviation is greatest, and to facilitate its introduction into the narrowed nostril, the distance between the back and the most prominent tooth is reduced to 3 mm.

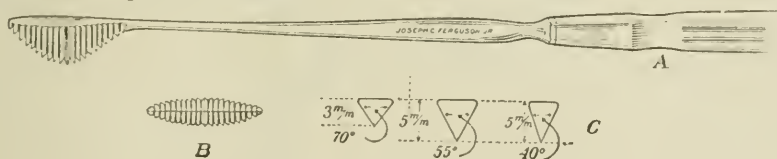


Fig. 1. Author's Saw-file.

The accompanying cut (Fig. 1) will readily illustrate the text. A represents a side view of the instrument as it lies on the wall. B is a face view, or architecturally speaking, a plan of the cutting part, and shows very clearly the arrangement of the teeth; and C is an elevation or cross section of the three different sizes, showing the angles at which the faces meet and the distance from the most prominent tooth to the back. The instrument was made for me by Joseph C. Ferguson, Jr., of Philadelphia, Pa."

My *modus operandi* is as follows:

General anesthesia is always used, and while the anesthetic is being administered, the septum is painted with a solution of adren-

alin chloride. When anesthesia is complete a finger is introduced for the double purpose of exploration and of pushing the septum sufficiently toward the midline to permit of the introduction of the saw-file. This finger is then withdrawn, and with a finger in the concave side to act as a guide, either one or two grooves are cut through the septum, as far as the perichondrium of the opposite side. If but a slight amount of tissue needs to be removed, one groove is sufficient; if a greater amount, either two grooves are cut at some distance from each other, thus converting the septum into three strips, or else a file of wide angle is used. If the deflection is extreme sufficient will not be removed if only the convex side be attacked, and to obviate this an additional incision, (Fig. 2),

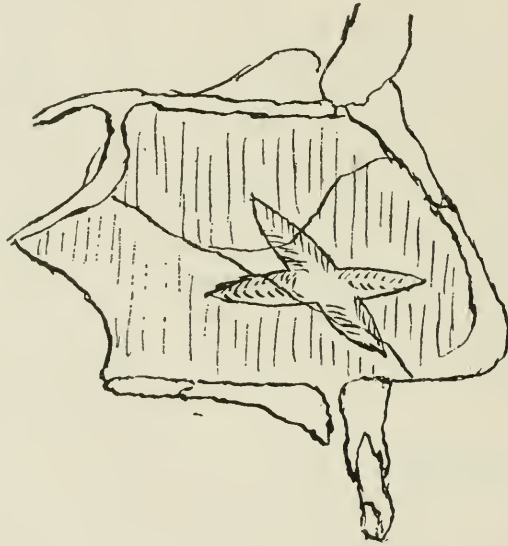


Fig. 2. To illustrate direction and position of cuts in antero-posterior redundancy.

as is recommended by Kyle, is required on the concave side. This is usually made at the point of greatest angulation. In this instance, of course, the muco-perichondrium of the concave side is not allowed to remain intact. To make and to remove a still wider strip, I have had a set of the saw-files truncated. The first cut or cuts can be made as usual, and then the additional tissue is removed by using the truncated instrument, which will widen the groove, and at the same time the blunt edge will push the muco-perichondrium ahead of it without laceration. This, of course, does not remove any of the antero-posterior excess, and is, therefore, not

an ideal operation. While the results so far have been quite satisfactory, in the future, whenever the conditions will allow it, I shall make the cuts so as to cross each other, and thus remove this antero-posterior redundancy. (Fig. 2.) When this is extreme a portion of cartilage should first be removed by the resection method of Ingals, as advocated recently by Freer, and the operation completed by removing V-strips *p. r. n.* After the grooves are satisfactorily made, the Adams forceps are introduced and pushed to the floor of the nose. The lower fragment of the septum is broken from its basal attachment and twisted toward the opposite side—over-corrected. The other segments are then pushed over, and if two cuts have been made, a slight amount of pressure with the finger will be sufficient. The operation is finished by the introduction of a Kyle's tube. In this way is secured a correction with very little trauma, with frequently an intact muco-perichondrium of one side, with removal of redundant tissue and with breaking up of resistance at the three essential points, upper margin, lower margin and point of greatest projection.

The after-treatment consists in the first place in watching the patient carefully for six weeks following the operation. Unless there arise points of tenderness or irritation in or around the nose, the tube is not removed for five days. It is kept clean by spraying with a warm alkaline solution, which is followed by some bland oil, and is removed and cleansed at intervals ranging from two to four days. Should there be evidence of pressure at any point, the tube can readily be indented to accommodate the projection or the edge can be trimmed away should it be cutting into the soft parts.

The advantages to be obtained by the use of the saw-file can be summarized as follows:

1. No preliminary dissection of the mucous membrane is required.
2. A properly-shaped strip of tissue is removed.
3. The strip is quickly removed, so that prolonged anesthesia is not required.
4. The margins of the cut are exactly parallel, and thus accurate coaptation and quick union are promoted.
5. The bony septum can be attacked as satisfactorily as the cartilaginous.

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**SOME MODIFICATIONS OF THE AUTHOR'S ORIGINAL
V-SHAPED OPERATION FOR CORRECTION OF DE-
FLECTION OF THE SEPTUM.***

BY D. BRADEN KYLE, M.D., PHILADELPHIA.

In operations for the correction of the various deflections of the nasal septum, it has been my experience that the greatest difficulty to overcome was not that of placing the septum in the median line, but in removing sufficient tissue to prevent any backward pressure on the septum, and a consequent return of the deflection. For the past six years I have been removing a V-shaped piece, or a number of V-shaped pieces, according to the deflection and amount of redundant tissue to be removed, from not only the cartilaginous, but also the bony septum for the correction of various deflections. The operation described in my book on pages 256-260 explains the V-shaped method as applied to certain forms of reflection. In a paper which I read before the American Laryngologic, Rhinologic and Otologic Society at Cincinnati in 1899, I recommended that in the majority of cases in which deflection occurred, this V-shaped operation should be used, and I have since concluded, and after operating on 152 cases by this method, I am convinced that it is one of the simplest and best methods for the correction of almost all septal deflections.

I first used a small, curved saw for making the incision, cutting out the wedge-shaped piece at the greatest point of deflection and redundancy, and making a simple saw cut at any other point on the septum necessary to allow it to be forced into line; this not only applied to the cartilaginous, but to the bony septum as well. The incision, either V-shaped or simple, was carried almost entirely through the cartilage or bone; this allowed of the molding of the septum into whatever position was desired, and also controlled the line of fracture when necessary to use the crushing forceps. For the past three years I have used almost entirely this V-shaped method, and out of the 152 cases I have had only 11 cases in which the operation was not entirely successful, and in each instance the failure was due more to complications than to the method. In

*Read before the Section on Otology and Laryngology of the College of Physicians, Philadelphia, May 21, 1902. *American Medicine*, Vol. III, No. 22, 1902.

no cases have I had perforation. By cutting out these V-shaped pieces, as shown in Fig. 1, the redundant tissue is removed, and if the V-shaped cut is made at the base of the septum so as to prevent any tendency to backward pressure, with one or two cuts made above, as shown in Fig. 1, and the septum supported by means of a metal tube, no difficulty will be experienced in retaining the septum in position.

To simplify the classification of septal deformities I will speak only of two varieties: 1. Septal deflections without external deformity; and (2) septal deflections with external deformity.

When the deflection begins at the base of the septum a V-shaped cut should be made on the concave side of the deflection close down to the floor of the nose (see Fig. 1). In making this V-

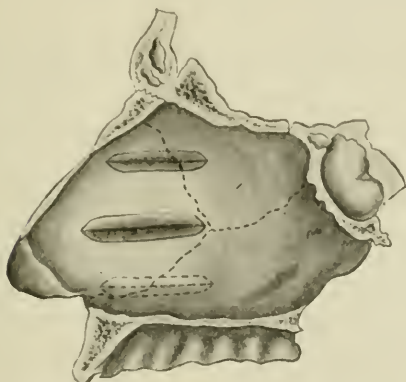


Fig. 1.



Fig. 2. Fig. 3.

The V-shaped cuts are diagrammatic only. The position and direction of cut will vary in different cases. The dotted line indicates where the cut should be made on opposite sides.

shaped cut the amount of tissue to be removed depends upon the angle of the deflection, care being taken to remove sufficient tissue so that when the septum is placed perpendicular there will be no backward pressure and the surfaces will come together as shown in Fig. 3. As many more incisions should be made as are necessary to break up the resiliency of the septum, so that it will swing freely from the top. These incisions may either be made by the thin curved saw blade, or if the redundancy is extensive and the curvature in the septum is pronounced then the V-shaped incision should be made. The rules governing the incision are based on (1) the breaking up of the resiliency of the septum by the removal of the V-shaped piece or pieces and simple saw in-

cisions, and (2) observing the blood supply and carefully avoiding the cutting off of any portion of the septum and its mucous membrane by parallel cuts on the same side of the septum.

In certain deflections where the redundancy is excessive a large V-shaped piece must be removed. This can be done without injury to the mucous membrane on the opposite side; this is highly essential so as not to disturb the blood supply and thereby prevent ulceration.

Originally in the majority of the cases I dissected up a flap of mucous membrane before making the V-shaped cut in the septum. This is not necessary in all cases. Neither could it be done where a number of cuts are necessitated. If, however, at the base of the septum it is necessary to remove a large V-shaped piece of the cartilage, a flap of mucous membrane should be dissected back before the removal of the cartilage. After the removal of the V-shaped piece the mucous membrane should be carefully molded back over the cut. It is not necessary to put in a suture, for if care be taken in inserting and placing the metal tube it will sufficiently support and hold this flap in place.

The only operation in any way similar to this, described in the various textbooks, is that of Ingals, of Chicago, in which he recommended for the correction of deformities of the anterior portion of the cartilage the removal of a triangular piece of cartilage after dissecting back a flap of mucous membrane. This membrane is replaced after the removal of the triangular piece of cartilage and retained in position by means of a suture.

In deformities of the septum, where the tissues have been forced down and the nose flattened, if it is desired to elevate the nose and place it in its normal position the V-shaped cut should not be used. The beveled edge cut, somewhat similar to the method used in lengthening shortened tendons, should be used instead. If, however, it is only desired to establish nasal respiration, the V-shaped cut should be used and sufficient tissue removed at different portions of the septum so as to allow of its being molded into line.

The question of redundant tissue is necessarily involved in this V-shaped operation. Whether or not it is called redundant tissue matters little. The principle involved in this method can be illustrated in a board which has warped. While the actual length of the board is only slightly altered, in order to place it back in line a series of saw cuts are necessary, the amount removed depending

on the curvature. This is exactly the principle of this V-shaped cut. If this method is properly applied it will remove redundancy either anteroposteriorly or perpendicularly.

For the removal of this V-shaped piece I have always used a small curved saw described in a previous article on this operation. In some cases, however, the making of the cut and removal of the V-shaped piece was very tedious and unless great care is exercised by the operator he will not remove a sufficiently large V-shaped piece of tissue to break up the resiliency of the septum. One case in particular in which I had great difficulty in removing the V-shaped piece suggested the advantage of an instrument which would make the cut and remove the tissue at the same time. Dr. George Fetterolf, who has assisted me in a number of septal operations and this one in particular, afterward devised the V-shaped file saw, as described in *American Medicine*, March 1, 1902. This is a most Admirable instrument for the removal of this V-shaped piece. The instrument can be made at any angle desired so that a large or small piece may be removed. It simplifies and shortens the operation very much.

While in nearly all cases it is necessary to make more than one incision it is rarely ever necessary to make more than two V-shaped cuts. The other incisions in the septum should be made with the thin saw merely to lessen the resiliency of the septum and permit of its being freely flexible and easily molded into shape. The length of the cut in the septum antero-posteriorly will depend entirely upon the extent of the deflection. This is also true of the width of the V-shaped piece to be removed.

The advantage of the saw cut in controlling the line of fracture when the bony septum is involved cannot be overestimated. The removal of the V-shaped piece of bone with a saw was a more difficult process than the removal of the piece of cartilage. The file saw is of special advantage in those cases in which the bony septum is involved. A sufficient number of incisions should be made and sufficient tissue removed by the V-shaped cut to allow the septum to be placed in the line and supported there by means of the nasal tube. There should be no pressure whatever from this tube, as it acts merely as a support and is not intended for pressure. Should swelling occur, however, after operation and the tension be too great, the advantage of this metal tube is that its diameter can be lessened by the introduction of a pair of forceps and the compressing of the tube. I have used these tubes for the past

six years and find them perfectly satisfactory in every way. They can be molded to fit any nostril either at the time of operation or afterward. This is a great advantage over the hard rubber tubes. The tube may be left in position as long as the septum needs support. I have allowed the tube to remain in position from three days to six weeks without any bad results. If there is any irritation produced by the tube, the nostril should be sprayed night and morning with camphorated albolin, one grain of camphor to the ounce of albolin.

If the V-shaped cuts as well as the straight cuts are made at the proper point and of sufficient length and width there will be little need for using the septum forceps for breaking up the resiliency. However, the small septal forceps of Roe or the small roll forceps as described in my book on page 257 may be used in breaking up



No. 4.

No. 5.

No. 5 should show the V-shaped cut extending down on the septum.

any remaining resiliency and to make the septum perfectly pliable.

The Sinexon dilator is of great advantage in cases in which the obstruction is such as to occlude the nasal cavity and make it difficult to insert the cutting instrument. The dilator should be set so as to limit the amount of pressure and passed through the obstructed side, using sufficient pressure to force the septum over far enough to allow of the free insertion of the cutting instrument.

The after-treatment is very simple. Unless there is evidence of infection I think it is better not to use any spray or douche. If, however, the inflammation is rather severe, cold should be used during the first eight hours; if necessary afterward heat should be

applied externally and a warm spray or douche of boric acid solution, eight grains to the ounce, should be used in the nostril.

Fig. 4 shows deflection of the septum with external deformity, and I wish to call attention to a very simple method of correcting this deformity. Figs. 4 and 5 need very little explanation. First a small oblique incision (see Fig. 4) is made through the skin into the nasal cavity on the convex side of the deflection just at the point of junction of the cartilage and bone, through which the small saw or file saw is then inserted and a V-shaped portion of cartilage removed. This should extend down on the septum (further than is shown in Fig. 5) a sufficient distance to break up all resiliency, and the amount removed should be sufficient to render the cartilaginous portion of the nose entirely pliable. The external wound is then closed by one suture, as it is not necessary to make an incision over $\frac{1}{8}$ to $\frac{1}{4}$ inch in length. It is then sealed with collodion over cotton.

The internal deformity is corrected the same as given above where no external deformity exists. It is of importance that a sufficiently large V-shaped piece be removed in order to render the septum perfectly pliable, in other words, to remove all redundancy. The principle involved in correcting the external deformity is identically the same as for the correction of the internal deflection of the septum. The prime object in all septal operations is to remove redundancy and break up resiliency. General anesthesia is preferable, although the operation can be done under local anesthesia.

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CORRECTION:—In the July, 1902, issue of the LARYNGOSCOPE, page 506, we published a superscription "*Empyema of the Antrum*," by C. M. COBB, M.D., Boston, Mass. This should be FREDERIC C. COBB, M.D., Boston, Mass.

RUBBER SPLINTS IN THE TREATMENT OF SEPTAL CURVATURE.*

BY J. PRICE BROWN, M.D., TORONTO.

Three years ago I had the honor of reading a paper before another American society on the use of rubber splints in the treatment following intra-nasal operations. Since that time I have had occasion to use them in many instances in which operative treatment was required; and now desire to lay before the Fellows of this Association, in a brief paper, the result of that experience: confining my remarks, however, to their use in cases in which septal curvature was the principal evil to be dealt with.

While vomeric ridges and exostoses may extend all the way back to the posterior nares, curvatures are usually confined to the anterior two-thirds of the septum; and a majority of these principally to the triangular cartilage. It is in the treatment of the latter class of cases that the rubber splint is particularly suitable.

In the formation of septal curvature there are several points which are of great practical interest. In a large majority of instances, particularly when occurring in adult life, the curvature of the cartilage is accompanied by thickening, which develops chiefly on the convex side, and in the neighborhood of the so-called septal tubercle. While this thickening is simply physiological on the straight septum, it becomes pathological on the curved septum, owing to the hypertrophic enlargement of the glandular tissue, occasioned by the rounding or stretching which the curvature gives to the mucous membrane. In these cases, while the tubercle on the concave side will shrink away into less than normal development, the tubercle on the convex side, lying in the region of the union of the vomer, with the perpendicular plate of the ethmoid, will enlarge sufficiently to interfere with normal breathing; and together with the general curvature of the whole triangular cartilage almost occlude the passage. Projecting backwards from the tubercle along the union of the supra-vomerine cartilage with the vomer, the hypertrophy may continue forming, in old cases, the

*Read at the Annual Meeting of the American Laryngological Association, Boston, May 26, 1902.

long osseous ridge so often met with. On the other hand, anterior to and below the tubercle, along the line of union of Jacobson's cartilage with the anterior end of the vomer a similar hypertrophic ridge may form, complicating and making larger the general curve.

Upon the etiology of septal deviations I will not enter, except to offer a mild protest against the idea, that the method of handling the olfactory organ has nothing to do with either the cause or increase of the deformity. It cannot be the chief cause; but I believe from my own professional experience, that in many cases of septal curvature, the habit of wiping the nose toward the concave from the convex side—which is habitual in all these cases—has a serious effect in aggravating the deformity.

If a dentist in a young adult can attach a chain to a tooth, which is blocked behind the adjoining ones for want of space, and by constant traction, in the course of a few weeks, draw the two apart, and pull the laggard one into line, it is reasonable to believe that the oft-repeated twigging of the nose in the one direction will have a serious effect upon the softer cartilage. These curved noses are always weeping; and pulling them many thousands of times each year to the one side, acts upon the principle of bending a green stick. The more frequently you apply the pressure, the more curved will the bow become.

My own experience differs also from some clinicians, who claim that when the bony septum is curved to one side the triangular cartilage is usually curved to the other. The rule I have found to be the opposite. It is possible when the chief deflection is that of the vomer, that the septal cartilage may curve the other way; but when the main deformity is of the cartilage, any septal ridge extending backwards has been almost invariably on the same side, as though the whole septum had formed a bow-like protrusion into one or other nasal cavity.

Sometimes these deformities are confined entirely to the cartilaginous region, the concavity on the one side being book-notched in form, and ending abruptly at the commencement of the bony septum—the convex side being rounded and hypertrophied in the region of the tubercle. In the treatment of such cases as these are the rubber splints especially useful; and it is to Mr. Lake that we owe the suggestion. He does not, however, mention the nature of the cases in which its use is advisable, nor the operation to which it serves as an adjunct. Still the shape of the splint and its advantages are spoken of by him in these words:

"Rubber sheeting should be kept in three thicknesses, one-eighth, two-eighths, and three eighths. The exact shape and size varies with each case. It may be either straight or boomerang, the latter enabling one to get pressure higher up the septum. If the thickest sheeting be used, the edges should have a long bevel given them by cutting with a sharp wet knife. These splints cannot become septic any more than can vulcanite; while they exert an elastic pressure which is less apt to cause sloughing and is surprisingly effective."

The class of cases in which I have personally found them most useful is the one that is the title of this paper; but the splint is rarely inserted without previously incising the cartilage. The usual method of procedure is the following:

The nasal passages are first sprayed with a one per cent solution of cocaine. This shrinks the tissues and renders the passages more open, enabling the operator to more thoroughly cleanse them. To accomplish the latter I prefer using an albolene or glycolene spray under pressure, as less likely to produce abrasion of the mucous membrane than are the alkaline solutions when similarly used.

A five to ten per cent solution of cocaine is then applied on a cotton holder to the septal cartilage on both sides, chiefly the convex one. Also a solution of adrenalin, 1 to 5,000. Local anaesthesia being induced the hypertrophied tubercle is removed if present, by knife or saw. Then a tenotomy knife is passed from behind forward in one or two straight lines over the convex surface and through the cartilage—the lines being a short distance apart and parallel to each other. These incisions are usually made on the bevel, enabling the cut edges to glide over each other. The finger is next passed into the nostril, and the cut septum pressed with little difficulty toward the medium line. A splint is now chosen that after insertion will produce slight pressure upon both inferior turbinated and septum when straightened. I like to have a fairly tight fit, with a splint not too wide, so that the elastic pressure will keep it in position. There should be room enough above the splint to pass a light cotton holder armed with a small pledget as far as its posterior end; and the inferior meatus sufficiently free to allow a similar cleansing right through to the pharynx. After insertion, as a rule, the splint should not be removed at all until healing and solidity have been accomplished, whether this takes two weeks or four or even longer. Still for some time the patient should be under the daily observation of the surgeon, and the nasal passage regularly cleansed by the use of the cotton holder dipped

in a weak solution of cocaine or mentholated albolene or other medicament, as the exigencies of the case might require.

For a day or two there might be a slight rise of temperature and some pain; but these would soon pass away; and after a week or so I have always been able to allow the patient to go to his home, usually at a distance, with instructions to keep me informed of the progress of the case, and to return for examination, etc., at a certain time.

The advisability of moderate tightness on the part of the splint is instanced in several ways. First, by its elasticity it maintains its position giving immovable support to the septal cartilage during the process of healing. Second, It promotes absorption of the overlapping edges of the cut cartilage; for on removal if allowed to remain until healing takes place, the septum on the side operated upon will present a uniformly smooth surface.

I know that I run the risk of opposition to this method of treatment, on the ground that such prolonged retention of the splint might favor the occurrence of sepsis. This has not proved to be the case. As I said before, when fever occurs at all, it is due to irritation, arising almost immediately after operation and quickly subsiding. During the long process of wearing the splint there is no fever whatever, and no symptoms save those that arise from the occlusion caused by the presence of the instrument; and which is usually less than that previously experienced from the simple existence of the curvature.

The operation in regard to hands and instruments is done antiseptically. Within the nasal passage is placed a smooth compressible aseptic body, which, as stated by Lake, cannot become septic; and the nasal passage above and below this harmless body, being kept clearer of secretions than it was before the operation, it is difficult to believe that the retention of the instrument during the process of healing can be productive of evil.

As illustrative of these facts, I will briefly quote the history of the following cases: ffff

Case 1. A boy aged 6 years, was brought to the outdoor clinic of the Western Hospital for treatment on account of entire inability to breathe through the right nostril. The occlusion had been increasing for several years and was occasioned, the mother thought, by a fall on the face which flattened the nose somewhat when he was two years old. There was a marked curvature of the cartilaginous septum to the right with a longitudinal ridge at its base. Un-

der chloroform the ridge was excised. Then an incision made over the centre of the convex curvature from behind forward, the course of the knife being guarded by the little finger in the left nostril. Notwithstanding this the knife accidentally penetrated the mucous membrane into the left nasal cavity. Hemorrhage was free; but a one-eighth splint long enough to extend beyond the triangular cartilage was at once pressed into the nostril. Bleeding ceased as soon as the splint was in place; and after the first hour or two there was no suffering. Nothing whatever was done afterwards, except to wipe away any discharge that might exude. The splint was removed two weeks later, revealing a perfectly healed, smooth, straight septum. After cleaning the splint it was replaced and worn another week; when it was taken out and the little patient discharged cured.

Case 2.—A carpenter aged 28, had his nose broken when a child by a fall, partially depressing the bridge. For years he had suffered from almost complete stenosis on left side. Examination. Right nasal cavity enlarged, presenting concave book-notched septum on that side. On left, large curvature with thickened tubercle and ridge along Jacobson's cartilage, filling the passage. After cocaine-ization an osseous ridge was discovered on same side, extending to near the posterior choana; while in the centre a bony synechia connected inferior turbinated with septum.

The first operation was to excise a portion of the enlarged tubercle, and Jacobson's ridge, and put in a rubber splint. Four days later the synechia and osseous ridge were sawn out; and after hemorrhage had subsided, a long rubber splint extending to the posterior naris was inserted. This was left in for a week. Then taken out daily, and after being cleansed, returned. The excisions in this case were extensive, although there was no linear cut into the septal cartilage. In six weeks the healing was very satisfactory resulting in a clear chink from end to end of the passage with reformation of mucous membrane.

Case 3.—A boy, aged 7 years, was brought to the hospital as a mouth breather, for treatment. He had been stunned by a blow on the forehead when four years old, since which time his mother reported, nasal breathing gradually became more difficult and finally ceased. There was curvature of cartilage to left with ridge at base. Columnar cartilage curved to right. Adenoids in nasopharynx. Under chloroform this ridge was excised. Then two bevelled incisions from behind forward were made through the car-

tilage on the curved side, the finger being placed in the right nostril to act as guide and protect mucous membrane from perforation. A two-eighths splint was at once inserted, pressing the cartilage into the medial line. While still under the anaesthetic a slip was taken from the columnar cartilage on the right side and adneoids removed. Two weeks later the rubber splint was taken out; the result being free nasal respiration and a good left nasal passage.

Case 4.—Boy, aged 17. Nose externally twisted to right. Said that he was struck by a ball on the nose two years ago, since which time nasal stenosis and deformity had occurred. Examination revealed extensive ridge formation on left side, with curve filling up the fossa, the tubercle part of the cartilage being adherent to the middle turbinated. Under cocaine I excised front part of ridge and the tubercle synechia; and after compressing septum to right with a chisel, I inserted a one-eighth inch rubber splint. Four days later, under chloroform, I made two incisions from behind forward through the septal cartilage, guiding as in other cases by the finger to the medial line, and a two-eighth rubber splint inserted. This was left in two weeks. The front part of the passage being now freely open, a bony ridge extending along the lower part of the vomer backwards was removed by saws; and to favor the formation of a smooth and even surface a long and wide one-eighth splint was placed in position. This created no discomfort. As the patient was returning home to a distant village he was instructed to leave it in without removal for a month. He wrote later that he had followed the directions, taking it out at the time stated; with the result of a better shaped nose and better breathing on both sides.

Case 5.—Divinity Student, age 26, October, 1900. Has had increasing nasal stenosis on left side for years, amounting to complete occlusion at time of examination, and destroying the tone and quality of the voice. There was a deep book-notch with wide passage on right side. On left curvature and general hypertrophy sufficient to completely fill the passage. One part of the cartilage from exposure to the dry air of respiration had become denuded of epithelium. The cartilage seemed to be very hard and resistant to pressure.

Under local anaesthesia from cocaine the case was operated on as in the others mentioned; but I could not press the septum to the medial line successfully, and only inserted a one-eighth splint. Ten days later chloroform was administered at the hospital and a cen-

tral cut made through the cartilage on the concave side along the floor of the notch. Relying on the previous cuts as well, the septum was then more successfully pressed toward the mesial line and a two-eighth splint put in.

The patient was kept in bed for several days. There was during this period some pain, and a rise of temperature of one or two degrees. But these symptoms gradually abated. The splint was worn continuously for two weeks, and becoming loose, was removed. As I was going South for the winter, a splint was not inserted again—simpler treatment for the time being resorted to.

In May, 1901, he returned to the hospital for treatment, a good deal of stenosis on the same side having recurred. Under chloroform I sawed out a ridge bone behind the curvature; and then made two horizontal cuts from behind forward on the concave side. Then with a spatula slipped over the curvature I forced the septum partially over, following this by the use of Delstanche's instrument. This time I put in a long and wide two-eighths splint. The pain following the operation was very slight, and the fever practically nil. Several weeks later the splint was removed, and as the patient felt well, and was going on a summer missionary tour to the North I made and inserted a splint that would give adequate support, and not be likely to become displaced. He went away on the 26th of June, and returned on the 19th of September, a period of twelve weeks, without ever having it removed. It had occasioned no discomfort. He had breathed somewhat through that side, and had found no difficulty in using his voice. On removing the splint the passage was free and the mucous membrane healed.

Case 6.—Boy, age 13. Mouth breather, snores and restless while sleeping. This, too, was an extensive curvature to the left with spur-ridge along Jacobson's cartilage. Deep saucer-like concavity on right side. After chloroform anaesthesia, a solution of adrenalin was applied, and the ridge removed with a knife. Then three incisions from back to front were made over the convexity, and a good sized one-eighth splint was used. There was neither pain nor rise of temperature. Three days later, under cocaine, the splint was removed, and a two-eighths one put in its place. The boy felt very well, and two days later, contrary to orders, took a long ride on his bicycle in the bent-over position. This caused a severe epistaxis from the other nostril, one of the incisions having perforated the septum. There was no bleeding from the plugged side. Tampons had to be inserted; but the splint was not removed.

In another week I allowed the boy to return to his home forty miles away, still carrying it. I heard from his father from time to time, but as the lad was attending school and free from all symptoms, he did not come back to the city to have it removed until four months after insertion. The result is that he has a free open passage, and has lost all his old naso-pharyngeal symptoms.

Case 7.—Lady, age 60, with curvature of septum to right; no anterior spur, but bony ridge along base of vomer. In this case, under cocaine and adrenalin, I treated the curvature first. The septum was hard. So instead of knife, incisions over the rounded surface, I made two saw incisions about half an inch apart; and then two knife incisions on the concave or left side. With Delstanche's instrument the septum was then pressed over to the mesial line, and a two-eighths splint put in. Two days later this was removed, the parts cocainized, and a three-eighths inserted in its place. This was worn for three weeks. The septum seemed consolidated, the ridge was sawn out, and another splint worn for a few weeks longer. I then showed the case to the hospital staff, the contracted nasal passage having been restored to a normal condition and appearing the same size as the other.

In closing I would remark that these splints can readily be made by the surgeon. The only tools required being a sharp knife, a pair of scissors, a file and a piece of sand paper. They are, as already remarked, smooth and pliable, and thoroughly aseptic; while their compressibility renders them superior to any other material of which nasal splints can be made. I may say also, that the edges should always be rounded, and while it would not be wise to put them in too tightly, care should be taken to have the instrument thick enough to keep its position, without resting for support on the floor of the inferior meatus.

While I advocate the wearing of the splint uninterruptedly as long as its services are required, I insist again on the necessity for oversight of the patient by the surgeon for the first few days, and subsequently keeping in touch with him until the splint is finally removed.

PARAFFIN INJECTIONS FOR NASAL AND OTHER FACIAL DEFORMITIES, WITH EXHIBITION OF A NEW INSTRUMENT.

BY FRANCIS J. QUINLAN, M.D., NEW YORK.

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Historical.—The credit for the introduction of paraffin injections for prosthetic purposes appears to belong clearly to Gersuny, who, in reporting his first cases in 1900, states that he had been conversant with the method for a number of years. But the idea of injecting solidifying oils for purposes other than prosthesis is considerably older than Gersuny and the credit for first carrying out the principle appears to belong entirely to Dr. Corning of New York, who injected solidifying oils for the relief of pain as far back as the eighties. We have not space here to cite the numerous ways in which Corning made this principle valid in combating pain, and must refer those who are interested in the subject to an editorial in the Medical Record for February 1st, 1902. The early work of Gersuny and his successors was directed entirely to prosthesis, and only after this use of paraffin had become well-established did it become apparent that the principle contained the possibility of a wider range of usefulness; and we find that Gersuny* has recently recommended his paraffin injections to prevent the reunion of nerve segments after neurectomy—just as Corning had done many years ago in the attempt to cure occipital neuralgia.

But the subject of prosthesis is in itself so important and far-reaching that we are justified in shelving any other uses of paraffin injections in this connection; and since Gersuny first published his experience in this field, the method has become widely known and endorsed on all sides. As all new therapeutic resources have to run a gauntlet of hostile criticism, it need not surprise us that paraffin prosthesis has been antagonized on various grounds. It

*Gersuny's Method (Moskowitz in *Wien. Klin. Woch.*, No. 25, 1901).

Technique: Gersuny used vaseline, known officially as "ungt. paraffini." This substance is known to the profession as "white vaselin for medical purposes." Its melting point is 36° - 40° C. - 97° - 104° F. At room-temperature this substance has the consistency of an ointment. It is sterilized by boiling, taken into the syringe and allowed to cool. When completely cool it is injected in the form of a fine thread.

has been claimed that the substances injected may exhibit toxic properties, that they may excite a serious local reaction and, finally, that they may induce paraffin embolism of the lungs.

Gersuny claimed originally that there is absolutely no inflammatory reaction following the injections; but in his later writings he conceded that there is a slight, albeit harmless, reaction. It is as well to admit that, whether from defects of antiseptic technique, or from causes less thoroughly understood, abscesses may form and sloughing may occur, and it is even related that "symptoms of tetanus" followed an injection of paraffin (Robinson). But accidents of this sort must be extremely infrequent, for the great majority of reported cases are devoid of any complications of this sort. In regard to chemical intoxication from absorption of paraffin or its derivatives, this is now conceded to be impossible with a chemically pure substance. Cases of alleged intoxication have indeed been reported, but they can be explained only upon the supposition of impure injecting substance.

The subject of paraffin embolism of the lungs has been made light of in this connection. This accident has occurred a number of times in connection with the injection of vaselinized calomel for syphilis. The two conditions are hardly similar, for in the anti-syphilitic treatment, the oil is not intended to become solid. Nevertheless pulmonary embolism is possible with Gersuny's original method of injection, as witness a case of Pfannenstiel's in which the former's directions were closely followed. But paraffin embolism of the lungs, however alarming the symptoms, is really a benign affection; and Gersuny now claims that by injecting the paraffin in a solid form, such an accident is impossible. Bearing all that has been said in mind it must be admitted that the injection of paraffin is a thoroughly benign procedure which has no more complications than any other form of minor surgical intervention.

Clinical.—Following Gersuny, many observers have used paraffin to fill up congenital gaps, as well as to overcome deformities resulting from cicatrices following loss of tissue; but in no part of the body has its use been more forcibly demonstrated than for the correction of congenital, traumatic and specific affections of the external nose.

The different contributions that have been voiced from various parts of the medical world, and the claims made by clinicians, have amply demonstrated that this adjunct to our present working arma-

mentarium has come to stay; and, although as yet enjoying a probationary existence, the results so far ratify its value and enhance its weight by the testimony of operators in this special field of medicine. Gersuny little dreamed, when he filled that scrotal pouch with vaseline, that this material would be injected into the many accessible cavities, and that untold benefit would result from its introduction. Surgeons have forced other preparations of paraffin into hollow cheeks, into the bladder, the rectum, and even the breast of the female has not escaped its invasion, and it has been recommended to contract the inguinal ring in hernia, and for the prevention of vaginal prolapse.

The various depressions attended by facial deformities that are daily met with in our clinics have been improved by this unique remedy. The external structure of the nostril has received its share of attention, and deformities that could only be overcome by mechanical supports of celluloid, tin, silver, gold, etc., are to-day treated by the paraffin method of injection with excellent results.

Haskin has recently demonstrated its utility in filling bony depressions following mastoid operations.

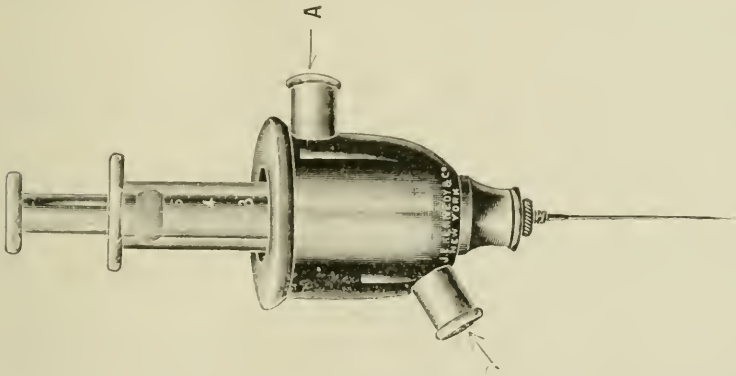
Harmon Smith exhibited at the Academy of Medicine, within a short time, a number of interesting cases which bore their weight of testimony, and reference may be made to the results of Stein in Bergmann's clinic, who cites a case of typical saddle nose cured by this subcutaneous injection.

Heath's recent article in "American Medicine" amply strengthens the many foregoing contributions. He offers in evidence the case of a man, aged 32 years, with entire absence of cartilaginous septum. One and one-half drams of paraffin at a temperature of 37° R. was injected between the eye-brows, and carried subcutaneously to the point of depression. The report of this method shows excellent results.

The technique hitherto employed has been attended by so much annoyance from the coagulation of the wax, due to the small opening of the needles found at present in the market and the peculiar temperature incident to the solidification of this agent; and it was therefore with much difficulty and considerable trouble that this material could be forced into the cavities. Many have abandoned the method on account of the disappointment due to its faulty manipulation.

A few words regarding the mechanism of the instrument sub-

mitted to the society may not be out of place here. An ordinary glass antitoxin syringe with a needle of a large calibre is used. This is encased in a metallic hood or jacket through which flows water at a temperature of from 118° to 125° F. This hood is fed from a receptacle holding not less than one to two quarts of water of the temperature named, which is placed on an elevation of from one to two feet above the operator. From this vessel a small rubber tube is attached to the hood, thereby allowing the operator to throw the fluid into the distal point of any cavity desired. The instrument presented is one of simplicity, the glass syringe being preferred to the metal one, in order that thorough cleanliness may be maintained, and the contents of the barrel viewed at all times. Asepsis is one of the most important elements in the manipulation of this remedy. Paraffin must be carefully sterilized.



The above cut represents the coil or barrel around Syringe. A is point of entrance of hot water, and B its exit through tubing. This instrument was made for me by J. E. Kennedy & Co., New York City.

The skin, for some distance about the point of puncture, should be thoroughly cleansed with a strong antiseptic solution, in order to render sterile the field of operation. Care must be taken that too much fluid is not forced into the cavity, as it is better to make subsequent injections than to render tense the structure by over-filling. Some attention must be given to the cellular tissue above the nasal bridge and on the sides of the nostrils, as abscesses may result, and in one instance even destruction of the lachrymal duct has been noted. After injecting the fluid, the operator can mould the substance to any desired shape or form by external manipulation. It is customary to spray the site with an iced antiseptic solution, and to seal the puncture with aseptic collodium, although

this is not always necessary. Some observers have thought that this fluid is absorbed, but as connective tissue replaces it, and maintains the desired form, it matters but little, so long as the deformity is corrected. The substance encapsulated, in a short time assumes almost a bony hardness, without exerting undue pressure upon the surrounding tissues.

The deductions from this method of medication seem to warrant a fair and further trial in a number of selected cases, and hence the argument for its use in many deformities on and about the face. The writer wishes to place before the Section his contribution to this method of medication, and reviews his work at the various clinics where he has given it a fair and honest trial. The results obtained seem to justify the continuance of this excellent and reliable agent. In thirty-two cases where this method was employed by the writer, but two unfavorable results followed. The first in a man of advanced years, with marked syphilitic destruction of the bony and cartilaginous septum, as well as almost collapse of the external framework; the second, in a chronic alcoholic, who developed a slight cellulitis afterwards.

In reviewing the work along the line indicated, the writer is satisfied that a new avenue has been opened up for the rhinologist in correcting marked deformities with but little risk.

The requirements for this operation are absolute asepsis and careful introduction of this fluid into the cavity.

It is now nearly 18 months since the author made his first injection for nasal deformity, and to-day, after due reflection, with the reinforcement of this new equipment, he feels that the novice and the expert can equally distribute this fluid where it is needed, with perfect safety to the operator, and to the delight and satisfaction of the patient. The field of paraffin prosthesis is limited only by the confines of surgery itself, and it is mere supererogation to detail the possibilities of the method. Wherever there is a defect of either hard or soft tissues, congenital or acquired, the injection of paraffin may render service, whether for a mere anatomical (cosmetic) or physiological end.

One point may be mentioned under the head of technique. It does not appear to be understood by the followers of Gersuny that the latter now injects his paraffin in the solid form. He allows the melted substance to cool in the syringe and forces it into the tissues in the form of a fine thread. In this way the possibility of paraffin embolism of the lungs is avoided.

THE LOCAL APPLICATION OF HEROIN HYDROCHLORIDE.

BY PROFESSOR ALBERT ROSENBERG, OF BERLIN.

The inquiries frequently made of me as to the local action of heroin hydrochloride in the larynx since my first report (*Die Heilkunde*, May, 1901), and the objections brought out against its topical use, have induced me to revert to these questions. With regard to the latter point any hesitation as to its local application may be dismissed if the quantity used does not exceed the dose prescribed internally, and this, as a rule, is not necessary.

I employed in my first experiments a watery solution of 1 to 20, 0.1 cm. of which contained 0.005 heroin, corresponding to the customary dose. In order not to exceed this limit I injected the solution with a laryngeal syringe containing 1.0 cm. and graduated accurately after the manner of the Pravatz syringe. The shaft of the piston has a scale up to 10, and is provided with a movable ring, so that after the syringe has been filled a slight turn of the piston rod from 1 to 2 will force out of the curved cannula just 0.1 cm. and no more, the regulator preventing any further advance of the piston rod. Inasmuch as the injected quantity, however, is sometimes insufficient to spray the desired area, I have lately reduced the concentration of the heroin to one-half, that is a solution of 1 to 40, so that of this 0.2 cm. can be injected without any risk. The effect was essentially the same as with the previously employed solution, so that I would advise now the use of the weaker solution.

The effect of the local application of heroin in the larynx is twofold; first, cough allaying, and second, analgesic. Heroin owes its recognition as a remedy against irritating and dry coughs to its influence in reducing both the central and peripheral irritability. This effect is naturally manifested by its local application, since it is as readily absorbed by the larynx or trachea as by the stomach. Aside from this there is another factor. We know that in cases of laryngeal tuberculosis, which are generally accompanied by severe attacks of cough, this symptom is not infrequently produced by the morbid changes in the larynx, especially the marked

granulating ulcerations. The granulations which are floated up and down during inspiration and expiration cause so violent a desire to cough that even a well disciplined patient is unable to suppress it. The assertion frequently made that the cough of patients with laryngeal tuberculosis always originates in the lungs, is not correct. I have been frequently able to convince myself that in these cases the troublesome tussal paroxysms can be rapidly removed, or at least considerably diminished in intensity, by anesthetizing the diseased area by means of such a drug as menthol. Similar conditions apply to the posterior laryngeal wall, which is so frequently the site of tuberculous disease, and which is the most sensitive cough locality in the larynx, although not the only one. If, therefore, we are in a position to allay the cough or remove it for a certain time by means of a local anesthetic or a drug, which will at least reduce the sensibility which is commonly increased in these cases, we do the patient a great service, especially those lamentable cases of laryngeal tuberculosis which are often greatly weakened in consequence of the tussal paroxysms and disturbance of the night rest.

The application of heroin to the mucous membrane reduces its sensibility, as we have found by numerous experiments. If we let a few drops of the solution flow from a drop bottle upon a cotton pledget and apply this to the mucous membrane of the nose, pharynx or larynx, in doing which often not one-half of the fluid is used up, we are able by touching the part's with a sound before and after the application, to demonstrate a diminution of the sensibility. Hence heroin is also of service locally in coughs in certain cases entirely apart from its internal effect.

In all patients suffering with laryngeal tuberculosis we have often been able to note a considerable diminution, and even an almost complete cessation of the cough for a number of hours up to twelve or even the entire night, as for example in the following case.

O. K., painter, 24 years old; tuberculosis of both pulmonary apices; slight infiltration of the posterior laryngeal wall; complains particularly of violent cough which not infrequently is associated with vomiting. January 3rd, at midday, 0.005 gm. heroin was injected over the posterior laryngeal wall. January 4, almost no cough until the following morning, the same conditions prevailing during the further use of the remedy, although not always to the same extent. The effect, however, was always more marked than after the internal use of the same dose.

Far more beneficial is its analgesic action, which chiefly determined us to employ it in the dysphagias which so often unfortunately accompany laryngeal tuberculosis. It is true that there are quite a number of drugs which have the same effect, such as morphine, cocaine, antipyrine, and menthol. On the other hand, the first two are best avoided, at least for continued use, owing to their injurious general effect, while the two latter produce an intense

burning before the development of the analgesia. Antipyrine, moreover, has an undesirable action upon the heart. I would not have it inferred, of course, that these remedies should not maintain their well-deserved place in the laryngological armamentarium. I would be the last to depreciate menthol, which I introduced into laryngo-therapy. It is very agreeable, however, to have at our disposal a large selection of remedies which are capable of removing the pains in swallowing of patients suffering with tuberculosis of the larynx, since one or another may fail in any given case. Hence I believe that heroin is deserving of some consideration in this condition, although I would add that it does not exert any special influence upon the tuberculous process.

Sch. C., 48 years old, tuberculosis at both apices; large fissured ulcer over the right false vocal cord. The patient complains of violent cough and lancinating pains in the throat, especially on swallowing. November 26, 1900, heroin hydrochloride 0.005 gm. was injected, which was followed by freedom from pains after two hours, with subsidence of the cough. In the night there was a feeling of fullness in the throat. Further injections made November 29 and 30 had the same effect. After the last injection there was again a feeling of entire painlessness and almost entire disappearance of the cough.

A. Z., 25 years old; hereditary phthisis; infiltration at the right apex; tuberculous infiltration of both ary-epiglottic folds. The patient complained that there was cough with vomiting and pains on swallowing. For several weeks heroin hydrochloride injections were made almost daily in the larynx, with the result that the pains at first ceased for several hours and later for the entire day. During the entire course of treatment she remained free from them. The cough was also relieved.

B., 35 years of age; tuberculosis of the lungs and larynx; tuberculous infiltration of the epiglottis and ary-epiglottic folds. After heroin hydrochloride injections made daily the cough was less marked, while the effect on the pains was similar to that following menthol injections.

In all our patients with laryngeal tuberculosis suffering with dysphagia, we obtained a satisfactory effect as regards the latter. This effect, just as I have observed with menthol, seems to be cumulative, the pains disappearing at first only for a few hours, and later remaining absent the entire day. Some of the patients stated that they also had a feeling of stricture or of a lump in the throat, which, however, was not annoying.

In order to obtain the full action it is, of course, necessary to deposit the fluid upon the site of the disease, and not to be satisfied with having merely injected the larynx. There will, of course, be some cases in which heroin, like all other medicaments, will not afford the results described above, but as I have already said, it is an advantage to have one more efficient remedy to meet these indications.

SOCIETY PROCEEDINGS.

EIGHTH ANNUAL MEETING OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY.

Held in Washington, D. C., June 2, 3 and 4, 1902.

CHARLES W. RICHARDSON, M.D., of Washington, D. C., Pres.

The meeting was held in the Cosmos Club, and was opened by an Address of Welcome by Dr. George M. Sternberg, Surgeon-General of the United States Army. He welcomed the Society to Washington as a centre of scientific work, and to the Cosmos Club, of which he is the President, as the centre of scientific work in the city. He said that he was glad that physicians in Washington were recognized, as they should be, as true men of science.

President's Address.

Dr. Charles W. Richardson, of Washington, D. C., delivered this address. He dwelt upon the university and scientific life of Washington, and the congenial surroundings for scientists. Touching upon the methods of teaching the specialties in medical schools, the opinion was expressed that the plan of compelling instruction in the special as well as in the other branches had led to undue crowding of the curriculum, and had been disappointing in its results. The instruction in the specialties, he thought, should be so planned as to supplement rather than to supplant the major branches, of which they form an integral part. Attempts to turn out full-fledged specialists should be promptly checked. Theoretically, the elective system was ideal, yet the tendency in the undergraduate life was toward too great narrowing by the elective system, and he thought in the long run the elective student would be overtaken and passed by those who had received a broader education. In the opinion of the speaker it was best to develop the specialist by post-graduate teaching founded upon a broad general education in medicine.

Speaking of the condition of the Society, the President said that there were now 233 names on the roll, and that the Section meetings had been better attended than in former years. A new depart-

ure has been made this year in the conduct of the annual meeting by establishing a pathological exhibit.

Aural Bougies.

Dr. George L. Richards, of Fall River, Mass., said that a few years ago he had spoken about the use of aural bougies for the relief of earache and otitis externa. He now desired to exhibit these bougies, which he had had made. They could be done up in tin foil or dispensed in lycopodium powder. After dipping in warm water they are inserted in the external auditory canal. They are composed of morphine, stropine, cocaine, carbolic acid and gelatino-glycerine. The following is the formula which is a modification of those introduced by Gruber: Carbolic acid 1-16 minim; fluid extract of opium, 1-7 minim; cocaine, 1-4 grain; atropine sulh., 1-14 grain; enough water, gelatin and glycerine to make a proper mass which will readily dissolve at the body temperature. These bougies are the size of a quill and half an inch long. In his experience, earache had been aborted by this means in considerably more than one-half of the cases occurring in children.

Exfoliation of External Auditory Meatus.

Dr. M. D. Ledermann, of New York, presented several specimens. The first was a specimen showing exfoliation of the external auditory meatus, occurring in a long standing suppurating case. On removing a polypoid formation this mass has been found lying loose in the canal. After the pus removed the discharge stopped in a comparatively short time.

A Large Fibro-myxoma.

The second specimen was a large fibromyxoma which could not be removed by the snare, but required evulsion. Suppuration ceased after the removal of the growth without any secondary applications. The growth was attached to the attic, and though a large perforation of the drum existed, it healed over under antiseptic treatment.

Foreign Body Removed with Difficulty.

The third specimen was a foreign body (a pebble) for the removal of which several unsuccessful attempts had been made by others. By taking off the auricle the body was removed, and the auricle was then sutured back in place. The pebble could not be seen through the external canal, as the inner third of the canal

was filled with granulated tissue which surrounded the foreign body. The probe detected a hard substance through the granulation tissue. Attempts were made to remove the stone through the canal, but the pebble had formed a cavity from which it could not be dislodged. After displacing the auricle and removing the granulation tissue the stone was extracted with a dull wire curette. A large perforation in the posterior-inferior quadrant existed together with a dislocated malleus, which was also removed under antiseptic treatment, healing of the membrane resulting in four weeks, with good healing.

Points of Necessary Prominence in the Treatment of Catarrhal Deafness.

Dr. Sargent F. Snow, of Syracuse, N. Y., read this paper. He believed that in chronic cases a good prognosis was warranted in many more cases than it is now given. The secret of success was often to be found in the relief of a constitutional condition by which the Eustachian tube is kept occluded. The best treatment was the introduction of air under pressure, saturated with gum camphor and iodine, through the Eustachian tube into the middle ear, but such treatment was out of the question until patency of this tube had been secured. The modern tendency to coddling and improper personal hygiene were serious obstacles to the successful treatment of these cases. Wool and linen mesh were the best materials for the undergarments. The living rooms should be well ventilated, and cold baths should be taken regularly. In a few cases in which such baths seem impracticable or undesirable, a partial substitute would be found in brisk, dry rubbing of the skin with a harsh towel. The functional activity of the liver must be maintained.

Dr. C. R. Holmes, of Cincinnati, said that he only disagreed with the author on the question of underwear. Personal experience had showed him that woolen underwear was not the best for the catarrhal subject. Most persons lived in over-heated rooms. They could not remove heavy undergarments, without trouble or possible danger while it was very easy to regulate the protection of the body by using light underwear and varying the weight of the outer clothing. He had many times taken persons, both old and young, out of flannel underwear in mid-winter without any serious inconvenience. During the past year he had adopted the plan of printing rules and detailed instructions for regulating

the living of these patients. If the patient would not in this way help the physician the local treatment would avail very little.

Dr. C. Dunbar Roy, of Atlanta, Ga., said that no fixed rules could be laid down which would be applicable to individual cases. He believed that woolen underwear should not be worn in the winter, the changes being made in the outer clothing. The nose was often operated upon when it could not relieve the condition of the ear. Because our nostril was stenosed was no reason for believing that the deafness would be relieved after the removal of the nasal obstruction. He preferred the use of a solution of menthol and iodine in albolene to the use of vapor in the Eustachian tube. He always made use of a solid silver catheter bent each time to adapt it to the naso-pharynx of the individual case. The condition of the drum membrane as to its pliability and the existence of adhesions should be ascertained before making a prognosis. In lithemic subjects, and in those nervous persons in whom there was a determination of blood to the head on slight excitement, special treatment was required.

Dr. S. MacCuen Smith, of Philadelphia, thought it was a mistake to put on heavy woolen underwear in winter, even in places as far north as Philadelphia. The general hygienic treatment outlined by the author was very useful. It had been his habit to make use of a hot shower or *douche*. There should be placed over the bath tub a frame made of gas pipe, and extending around the entire periphery of the bath tub at the height of six or eight feet. In this way a solid stream of hot water presses the full length of the spinal column. Hot water and cold water are used in quick alteration. By this means the person becomes less susceptible to changes in temperature. Physicians were generally inclined to overlook the value of respiration through the skin. He had not the slightest doubt that auto-intoxication arising from fecal accumulation was often a complication in these cases, and hence, he believed in flushing the colon every day for a few days, and then once a week. From two to four quarts should be used for each flushing.

Dr. Max A. Goldstein, of St. Louis, said that from the trend of the discussion so far it would appear that we were now on the eve of finding a method of curing the great bugbear, chronic catarrhal otitis media, yet he was still of the opinion that that much-to-be-desired goal is still a long way off. The hygienic treatment has been well outlined in the paper, but would not be found suffi-

cient in many cases, and often after years of faithful and well directed treatment the discontinuance of the treatment would be quickly followed by relapse.

Dr. George L. Richards said that he admired Dr. Snow's enthusiasm and wished that some of his cases with chronic catarrhal deafness were so situated that they could be placed in Dr. Snow's hands. Chronic catarrhal otitis media could exist with the nose and pharynx in perfectly normal condition. One great difficulty was that these patients did not seek relief until quite late. Professor Minot had recently announced that he had discovered glands in the Eustachian tubes, a point which might explain some of the intricacies of this subject.

Dr. E. B. Dench, of New York, agreed with Dr. Holmes as to the advisability of changing the outer clothing rather than the weight of the underwear. It had always seemed to him that silk was the worst fabric for underwear because it quickly became saturated with moisture, and the wearer was therefore exceedingly liable to be chilled upon the slightest exposure to cold. The linen mesh underwear was found very comfortable and useful by many catarrhal subjects. He believed that these cases of chronic catarrhal deafness could be very materially benefited. These patients should be told at the outset that cure was probably out of the question, and that improvement could only be effected by a long course of treatment. Discouraging as were these cases, his experience had been that, in persons who would intelligently co-operate with the physician, the results were encouraging, and even in the worst cases the deafness would increase exceedingly slowly.

Dr. William L. Ballenger, of Chicago, said that he had been almost carried away with the eloquence and logic of the reader of the paper, and while the treatment must, for the most part, be that outlined in the paper, he could not entirely share Dr. Snow's enthusiasm or endorse his favorable prognosis. The reasons for failure were obvious from a study of the pathology. The disease was one in which the mucosa had been hypertrophied, and adhesive bands extended to the drum membrane or the ossicles. Moreover, the pathological conditions in the Eustachian tube complicated the case. This tube contains considerable lymphoid tissue, which by hypertrophy, often caused obstruction. Under such conditions hygienic treatment could not be expected to effect a cure.

Dr. D. J. Gibb Wishart, of Toronto, Ont., remarked that the

reader of the paper had not insisted upon hygienic treatment alone, but only that it should be given its proper place.

Dr. John A. Thompson, of Cincinnati, said that the preventive treatment should receive consideration. The proper treatment of the nose and throat during the acute infectious diseases of childhood, and in typhoid fever and acute articular rheumatism, would accomplish much in this direction.

Dr. John O. McReynolds, of Dallas, Tex., endorsed what had been said by the previous speakers regarding underclothing, and heartily recommended the use of linen. The linen absorbs the moisture very much more rapidly than the other fabrics. The linen mesh had served him very well. It was exceedingly difficult in the South to induce ladies to take sufficient exercise because of the hot climate. About the only exercise they would indulge in was swimming.

Dr. Lewis A. Coffin, of New York, quoted a remark once made by Dr. D. E. St. John Roosa, in a discussion of this kind, i. e.: "Yes, gentlemen, they will all hear, but it will be when Gabriel blows his horn."

Dr. Snow said he agreed fully with those who had spoken regarding the use of thinner underwear in winter than was commonly worn. He had been wearing linen mesh for years, but in his cold climate he found a light woolen garment necessary for two or three of the winter months. With regard to the use of vapors, he wished to say that by injecting these interruptedly the mobility of the parts seemed to be increased by the manipulation. The auscultation tube should always be used in giving the treatments. Auto-intoxication appeared to have an important connection with many, but not all of these cases. The sclerosed cases certainly appeared hopeless, but there was a great many more which could be benefited by appropriate treatment. Even in the more intractable cases he was becoming more hopeful as a result of giving daily treatments instead of at longer intervals as formerly.

The Effect of Climate on Laryngeal Tuberculosis with Special Reference to High Altitudes.

Dr. Robert Levy, of Denver, Colo., read this paper.

This paper will be published in full in *THE LARYNGOSCOPE*.

Dr. Levy exhibited in connection with his paper an Antitubercle Screen and Laryngoscopic Chair.

DISCUSSION.

Dr. Arthur G. Root, of Albany, said that he believed tuberculosis was the greatest social problem confronting the human race to-day, and it required a united effort on the part of the profession to solve this vital question. He knew of no locality within the United States to which every case of tuberculosis should be referred, though he knew of a number of places in this country to which certain cases should be referred. Intelligent treatment of tuberculosis would be productive of better results than could be possibly attained by any climate alone. It was generally admitted that laryngeal tuberculosis might be primary in a few instances. A case of tuberculosis showing fairly advanced pulmonary lesions, and giving a history of repeated hemoptyses, should not be referred to a high altitude until this condition had improved. The dryness and purity of the air constituted the essential elements. It was safer for the person to gradually reach a high altitude so as to avoid excessive strain. Such climatic treatment combined with the other recognized methods would probably give the best results.

Dr. C. Dunbar Roy said he did not believe that tuberculosis was ever primary in the larynx. He knew of no treatment equal to a suitable climate. Altitude was not all. Dry air was the most important desideratum. Atlanta was situated at an elevation of 1,500 feet, but in that moist climate he had seen cases of tuberculosis get steadily worse, and only improve when sent out to the dry air of Arizona. By one, deep strong inhalation of a strong solution of menthol in albolene it was often possible to detect pulmonary tuberculosis in its incipency. A cooling sensation would be experienced in the lung not involved.

Dr. H. W. Loeb, of St. Louis, said that since hearing this paper he had changed his view of which he had previously held, i. e., that it was better for cases of laryngeal tuberculosis to die at home than in Colorado. He had known cases of tuberculosis which had received every kind of treatment at home without improvement, improve rapidly after going to Arizona and receiving no treatment.

Dr. John O. McReynolds said that about two years ago he had resolved not to treat any more cases of laryngeal tuberculosis because, no matter how faithfully he treated them at home, he found they did better in a more suitable climate without any treatment whatever. He had succeeded in getting the best results in an alti-

tude of about 3,000 feet on the plains of Western Texas. San Antonio had an excellent reputation as a health resort for tuberculosis patients, but recent statistics showed that so many such persons flocked there that the natives were contracting this disease. Experience showed that these patients did absolutely better when away from many other tuberculous patients and with only such treatment as they could carry out themselves.

Dr. G. L. Richards said that he met with many persons afflicted with laryngeal tuberculosis who could not leave home and must be treated to the best of our ability. He had already reported ten cases which were helped and several apparently cured by simple local treatment, such as the use of lactic acid and paramono-chlorophenol.

Dr. S. MacCuen Smith, of Philadelphia, said that in countries like Scotland, despite the moisture, the results seemed to be as good as in high and dry altitudes.

Dr. M. A. Goldstein, of St. Louis, said that he had many patients with incipient pulmonary and laryngeal tuberculosis to the western divide, and they had returned home with decided improvement in the laryngeal condition. He had treated three cases of laryngeal tuberculosis in St. Louis, occurring in residents of Denver, and despite the treatment they had become worse. They all improved after having been back in Denver for about six months.

Dr. Sargent F. Snow said that altitude seemed to act well in a few cases of the stimulation of the circulation and improvement in the general health. Like Dr. McReynolds he did not give his cases of laryngeal tuberculosis local treatment, but sent them to a moderate elevation, about two thousand feet, and if they did not do well there they were sent to a higher altitude. Many of his cases had done well in the Catskill and Adirondack mountains.

Dr. M. D. Ledermann commended the impartiality of the paper under discussion. He firmly believed that the high altitude treatment was very promising. It was doubtful if tuberculosis was every primary in the larynx. Out-door treatment was most important, and extensive medication was contraindicated.

Dr. Levy, in closing, said that, of course, no one climate was suitable for all cases. As a rule, the cases developing the diseases in Colorado were obliged to seek other climates for even temporary relief. The stage of the disease and the patient's financial condition must always be taken into consideration before sending them to some special region for climatic treatment.

The Constitutional Manifestations Due to Infectious Processes in the Adenoid Structure of Children.

By Dr. D. Braden Kyle, of Philadelphia.

This paper will be published in full in *THE LARYNGOSCOPE*.

DISCUSSION.

Dr. C. R. Holmes said that he had frequently met with these cases, and had found that they often suffered also from tubal catarrh. Sometimes the quantity of adenoid tissue had been so small that operation had not seemed necessary, yet on the removal of this small mass of tissue the tubal disorder had also disappeared.

Dr. Robert Levy said that, with the exception of West, he did not know of anyone who had directed attention to this important matter. A case was mentioned occurring in his own experience in which with only a moderate adenoid hypertrophy a fever of considerable duration was quickly controlled by washing out the nose, and a cure effected by removal of this adenoid tissue.

Dr. D. J. G. Wishart said that the infoldings of this gland were so deep that the absorbing surface was made very great, and the subject was worthy of considerable attention.

Dr. J. A. Stucky, of Lexington, Ky., said that until a year or two ago he had been inclined to look upon the cases described in the paper as being dependent upon irritation of the alimentary canal rather than of trouble in the naso-pharynx. Very frequently the patient was relieved by a mercurial purge, but he had met more recently with a number of recurrent cases, and the removal of a small mass of adenoid hypertrophy had effectually prevented further attacks.

Dr. L. A. Coffin, of New York, referred to a case in which a child was thought to be suffering from malaria, but the usual anti-malarial remedies failing to give relief, the naso-pharynx was examined and pus discovered, apparently coming from the ethmoidal region. Adenoids had been previously removed from this child's naso-pharynx. He was inclined to think that retention of pus at various points explained these cases.

Dr. W. E. Shields, of St. Louis, reported an illustrative case.

Dr. Dunbar Roy insisted upon the use of the post-nasal mirror rather than the finger in the examination of the naso-pharynx. Reference was made to a case in which the naso-pharynx was occluded by a whitish membrane, causing great obstruction to breathing, but associated with no rise of temperature. Two cultures for the Klebs-Loeffler were negative.

Dr. C. G. Coakley, of New York, was of the opinion that inspection with the mirror often gave a very faulty idea of the amount of lymphoid tissue present when the latter was situated low down.

Dr. H. W. Loeb, of St. Louis, said that he had opposed to the removal of adenoids unless they occluded the tube or interfered with nasal respiration. He had had under observation a child with attacks of otitis media recurring at intervals of a few weeks. There was a very small mass of adenoids, but since its removal there had been no more of these attacks.

Dr. C. E. Munger, of Waterbury, Conn., said that he had been called to see a case of diphtheria because of the great difficulty in breathing. He had removed at once a very large mass of necrosed adenoids, with the result that there had been a quick amelioration of the symptoms. This was the only time that he had operated during an attack of diphtheria.

Dr. Kyle, in closing, said that he often made an examination for adenoids with a nasal speculum and a small electric lamp in the mouth. Only about once in a hundred and fifty times could a satisfactory examination be made in a child by means of the rhinoscopic mirror. He often made use of the finger, and could determine adenoid hypertrophy with it when this was impossible to either of the other methods.

Report of a Case of Rapid Necrosis of the Temporal Bone Following Scarlet Fever.

Dr. Francis R. Packard, of Philadelphia, was the author of this paper. The subject of the report was a child who had been in good health and had no disease of the ear prior to an attack of diphtheria followed by scarlet fever. Examination then showed a large sequestrum of bone plugging the external auditory canal. Streptococci and staphylococci were found in both ears, though in only one was there any extensive necrosis.

A Case of Fibro-Papilloma of the Larynx with Unusual Movements.

Dr. H. W. Loeb, of St. Louis, reported this case. A woman of thirty-eight years was the subject of the report. The history dated back to an attack of suffocation and dyspnea coming on during the night. Her voice was jerky, but there was nothing about the breathing to indicate laryngeal obstruction. Examination of the larynx showed apparently a tumor on the posterior wall of the infra glottic portion of the larynx and trachea. As expiration began the tumor appeared, swung around and passed into the supra-

glottic portion; then a second tumor appeared and surmounted the first tumor, almost completely hiding the glottis from view. During phonation, as a rule, only the first tumor succeeded in getting above the glottis. Three tumors were first removed by the forceps and a fourth one at a later sitting. It was evident that the tumors had sprung from the inferior surface of the right vocal band, and that their mobility was due to the length of the pedicle.

Dr. George L. Richards said regarding the removal of intralaryngeal tumors under local anesthesia that if one-quarter of a grain of morphine were given about half an hour before the operation, it would greatly aid the operator as the natural reflexes would be much less marked as a result and the local anesthesia intensified.

Spasmodic Torticollis Following Adenotomy.

Dr. John M. Ingersoll, of Cleveland, O., presented this communication. He said that spasmodic torticollis following any operation was very rare. He had only found the record of one case occurring after adenotomy, and that had been reported by Dr. J. F. McKernon. His own case occurred in a well nourished boy. The adenoid tissue was removed under cocaine anesthesia with a Gottstein curette. Two days later the boy returned with a typical torticollis. Three hours after the operation the boy had begun to complain of pain in the throat, and the face turned to the left. Examination showed no apparent injury to the surrounding structures. The disorder was looked upon as a neurosis, and he was treated by suggestion and massage. The torticollis was easily overcome, and did not recur. The speaker was of the opinion that recover would have taken place, though perhaps more slowly, without any treatment. Two cases of torticollis had been cured by Dr. A. J. Gillete by adenotomy.

Dr. Thomas H. Halsted, of Syracuse, said that he had met with an exactly similar case in which the torticollis had entirely disappeared after nine days without any treatment.

Dr. William R. Lincoln, of Cleveland, O., recalled a case, occurring in a young girl, upon which he had operated for adenoids. The next day the muscles of the soft palate were found to be alternately relaxing and contracting, and inquiry elicited the fact that the child had suffered from chorea some time previously.

Influenza as a Causative Factor in Inflammatory Diseases of the Respiratory Tract.

Dr. W. B. Shields, of St. Louis, read this paper. In his experience the sinuses most frequently involved were the frontal and ethmoidal and the affection was sometimes associated with impairment of memory and lethargy. All cases of frontal sinusitis recover without operative interference unless there is pre-existing polypoid hypertrophy or inflammation of the sinuses. The sphenoidal sinus was often affected, but recovery was usually spontaneous. The worst cases were those in which the ethmoidal cells were affected. The laryngitis of influenza was similar to that found in ordinary colds. The most distressing and dangerous cases were those in which influenza attacks the lungs, and this was particularly so in persons showing arteriosclerosis or chronic disease of the lungs. The tendency to tuberculous infection after influenza was well marked.

Dr. J. A. Stucky said that he had met with very few cases of influenza which had affected the larynx or the lower portions of the respiratory tract. He had noticed that violent frontal and occipital headache were out of all proportion to the constitutional disturbance. The nose would show perhaps only a slight swelling of the turbinate, and the temperature of the body was apt to be subnormal in the morning and rise to 100° or 101° F. later in the day. Small hemorrhagic spots were frequently found in the drum membrane of the ear. In three cases he had observed loss of smell and of memory following influenza. The majority of these cases could be relieved without surgical interference unless there had previously existed a polypoid degeneration or some other abnormal condition. Because of the prostrating effect of the disease the patient should be put to bed at once. The salicylates combined with the bromides had given him the best results in the constitutional treatment. He avoided the use of opium and of the coal-tar products. To relieve the pain he used dry heat or a very weak saline solution of adrenalin, one to eight or twelve thousand. The mistake was often made of using too strong a solution, thus causing excessive reaction. The pain was due to retention of secretion.

Dr. Shields objected to the use of adrenalin in any disease of the frontal sinuses in which there was acute inflammation. He preferred a weak solution of cocaine or of eucaine.

Various Operative Procedures for the Relief of Chronic Suppurative Otitis Media, and their Comparative Value.

Dr. Edward B. Dench, of New York, read a paper upon this subject. In a consideration of the topic, he confined his remarks to those cases of long standing, in which suppuration had persisted in spite of the ordinary measures for relief. In all cases the cause of the otorrhea was diseased bone within the tympanic cavity. In order to effect a permanent cure it was necessary that all diseased foci should be removed, and that any wound resulting from the surgical interference should be made to heal as quickly as possible in order that all regions previously diseased might be quickly covered with normal epithelium. In cases where the caries was confined either to the ossicles or to the ossicles and those parts of the tympanic cavity which were easily accessible through the external auditory meatus, excision of the ossicles and thorough curettement of the tympanic cavity through the external auditory canal constituted the ideal procedure, both on account of its simplicity and its safety. The author showed both from his own statistics and those of other operators that the simple operation of removal of the ossicles and thorough curettement of the tympanum, effected a cure in at least one-half of the cases operated upon and he advised this procedure, provided the cases submitted to the operation were carefully selected. In every case in which this operation was undertaken the author emphasized the necessity of a thorough and complete search for the incus. The reason for this was that this ossicle was most frequently the initial seat of the intratympanic caries, and even though only a small fragment of the ossicle remained, this would be sufficient to keep up the suppuration. It should be remembered that the incus usually lies close to the margin of the tympanic ring. Occasionally it may be displaced into the lower part of the tympanic cavity by the operator in extracting the malleus. The speaker drew attention to the fact that while many operators considered the operation as finished with the removal of the ossicles, it was important to bear in mind that the operation was not complete until all diseased bone had been removed from the tympanum by the thorough use of the curette. Hemorrhage could usually be controlled by packing with sterile gauze strips or with gauze strips saturated in a sterile solution either of adrenalin chloride or of suprarenal extract. When there was extensive caries of the middle ear it was necessary to thor-

oughly expose the tympanum and the adjacent cells by the free removal of the osseous walls. When the mastoid cells were also involved, the mastoid antrum was entered as the initial step of the procedure and the author advised this as the first step in practically every case in which the radical operation was indicated. His custom was to make the incision through the soft parts, 5-16th to 1-2 inch behind the line of the posterior auricular fold. The anterior flap was then dissected forward and the posterior margin of the bony meatus exposed. The author found that if he dissected out the fibro-cartilaginous meatus from the bony canal that this membranous tube would rupture posteriorly close to the level of the drum membrane. He favored entering the mastoid antrum through the external auditory canal, as the initial procedure. The operator was next advised to follow the upper wall of the external meatus inward and remove the floor of the tympanic vault, thus throwing the tympanic vault and the antrum into one large cavity. The next step was to break down the bridge between the opening already made in the mastoid and the external auditory meatus. This procedure involved the removal of the posterior wall of the external auditory meatus. This should be done freely, the bridge being taken away completely down to the floor of the external auditory canal, as far inward as two-thirds the length of the canal, that is the outer two-thirds of the posterior wall of the meatus should be removed completely and made continuous with the mastoid opening. It was considered unsafe to remove the posterior wall of the canal to this extent throughout its entire depth for fear of injuring either the facial nerve or the horizontal semicircular canal. If the bone was removed according to the plan already described the horizontal semicircular canal and the aquaeductus Fallopii, lying just below it could be easily seen by the operator and all diseased bone remaining could be removed without injury to these structures. Where the mastoid cells were pneumatic, these were to be thoroughly explored until firm bone was reached. Hemorrhage sometimes constituted an obstacle to the operation, but could always be controlled by firmly packing the cavity with gauze. In some instances, the operation was prolonged on account of persistent oozing from the bony structures, but in no case was hemorrhage so severe as to prevent the completion of the operation. The middle ear and mastoid having been thoroughly cleared out, it was next necessary to provide an epithelial lining for the extensive

bony cavity thus formed. Such a cutaneous lining was obtained by forming flaps from the posterior wall of the fibro-cartilaginous meatus and from the concha. The exact form of flap to be employed must vary with each individual case. The writer had found that in most cases it was wise not to limit these flaps to the fibro-cartilaginous meatus, but to take some tissue from the concha as well in order to secure a larger amount of cutaneous covering for the exposed bone. He had also found that it was of material advantage, in most cases, to dissect out the fibro-cartilaginous tissue from these flaps, so that the integument might be applied more perfectly to the bony walls of the cavity. There was danger in this operation of injuring the facial nerve, the horizontal semi-circular canal, the labyrinth and the lateral sinus. Any of these accidents could usually be avoided by care on the part of the operator. Comparing the results of these two operations upon the function of the organ, the writer stated that the surgeon could generally promise that the hearing would probably not be worse after the simpler operation of removal of the ossicles, but would, in the majority of cases, be improved. The effect of the radical operation upon the hearing was somewhat uncertain. In many cases it remained the same as before the operation, in a few it was made worse, and in others the hearing was improved. It was, therefore, wise prior to the performance of the radical operation, to caution the patient that the function of audition might be greatly impaired as the result of the operative procedure.

Chronic Suppurative Otitis Media. When Should Radical Surgery be Employed in Its Treatment, and of What Should This Consist?

Dr. George L. Richards, of Fall River, Mass., presented this paper.

This paper will be published in full in the September issue of *THE LARYNGOSCOPE*.

DISCUSSION.

Dr. S. MacCuen Smith, of Philadelphia, advocated the early recognition and treatment of acute suppurative disease of the ear in order to prevent many of these cases from becoming chronic. A very large percentage of these cases could be cured if proper treatment were early instituted. Early incision of the membrana tympani could do no harm, and would often arrest the process before suppuration had begun. His experience had been that in a rather large percentage of cases in which the tympanic operation

had been done, the radical operation would be subsequently demanded. He preferred the Stackle-Schwarze operation because of the diminished danger to important contiguous structures. The lateral sinus was certainly more forward in these chronic cases, as pointed out in Dr. Richards' paper. The effect on the hearing was of slight and secondary importance.

Dr. R. C. Holmes reported another case of facial paralysis coming on after ossiculectomy and curetting of the upper and posterior wall. Complete paralysis developed on the seventh day and disappeared in about two weeks. He had never been in favor of the Stacke operation because of the liability of wounding important structures. A study of a great many temporal bones and taking plenty of time in operating would minimize these dangers. He had frequently exposed the dura and the lateral sinus, and did not think there was any danger in so doing. He preferred to open up and see what he was doing so as to effect a permanent cure. He believed that there should be 100 per cent of cures after one or more radical operations, barring intracranial complications. He was satisfied that Dr. Dench's method of using the incus hook was better than that taught him by Schwarze, and he had proved by actual experiment that by the latter method there was danger of dislocating the incus into the antrum. He preferred to do the plain Schwarze-Stacke operation, and the actual time of operation with him varied from twenty minutes to an hour and a half. If one cut freely into the cartilage one was likely to have perichondritis result with consequent shrinkage of the ear. In the majority of cases he left the wound open at first, allowing it to close in the second or third week. In young persons it could sometimes be closed at once. In the vast majority of cases the hearing had been better or not injured. Chronic suppuration even of a low grade was unquestionably deleterious to the general health, as was shown by a slight rise of temperature and a sallow complexion. The mouth of the tube should be most thoroughly, almost severely curetted. According to his experience the after-treatment was very important, and it seemed impossible to drain the average hospital interne in a short time to dress these wounds properly.

Dr. James F. McCaw, of Watertown, N. Y., asked what was the experience of the members with ossiculectomy as to the formation of a new tympanic membrane, and what had been the effect on audition. This question was prompted by personal experience.

Subsequent to this new membrane formation, improvement in hearing had been afforded by the use of the Valsalva method. Immediately after the operation the hearing had been enormously augmented. The formation of the tympanic membrane had required about two years.

Dr. M. D. Ledermann, of New York, said that he thought all would agree that the radical operation would be the future treatment of chronic suppurative otitis media, but the dangers must be taken into consideration. At the last meeting of the society he had reported a case in which there had been a malposition of the lateral sinus. In using the chisel heroically one was apt to make too rapid progress. Where there was mastoid involvement there was danger of sinus thrombosis from the opening of a sinus previously healthy. He knew of three such cases; hence the necessity for the cautious removal of the diseased tissue around the sinus. He recalled a case in which reformation of the drum took place in four weeks, the case being one of long standing-suppuration. At that time the patient complained of pain and, fearing retention of secretion, the membrane was removed and also some granulation tissue found in the attic. This caused severe vertigo and vomiting, which necessitated the patient's remaining in the office for two hours. One of his cases had been compelled to stay in bed for two weeks because of severe vertigo and projectile vomiting. He would again insist upon the great importance of thoroughly curetting the tympanic orifice of the Eustachian tube.

Dr. Robert Levy asked what was the average length of time the discharge lasted after the two flap methods described; also in those instances in which the posterior wound was allowed to remain open for three or four weeks, what was the after-treatment of this portion.

Dr. Dench said that the drum membrane sometimes re-formed, and it seemed often to make the hearing worse. He did not think the special flap method required had any effect on the time the discharge lasted; he ordinarily expected this time to be from six weeks to two months.

A Naso-Pharyngeal Tumor.

Dr. G. Hudson Makuen, of Philadelphia, reported this case and exhibited the patient. He was a youth of eighteen, having a tumor attached to the posterior third of the left nostril and to the vault of the pharynx. Both nostrils were practically occluded. The tu-

mor filled the vault of the pharynx. A small section of the growth had been examined by Dr. David Riesman, who reported it to be an edematous fibromatous growth characterized by stratified epithelium. On July 7, 1901, under ether, a portion of the growth had been removed with a snare and No. 0 wire. The tumor was very vascular and the operation was followed by considerable hemorrhage. This specimen was examined by Dr. W. M. L. Coplin and thought to be granulomatous. Nothing had been done since that time, and the patient had become apathetic in regard to it. There had not been much change in the case except the appearance of an infiltration of the muscles of the cheek. Antisyphilitic remedies had been employed without effect.

Dr. H. W. Loeb said he did not place over-much reliance on the diagnosis by the microscope of this class of cases. He would suggest that in this particular case electrolysis be used. He had seen marked improvement in three such cases, not only in a reduction of the vascularity, but in the size of the growth, and others had reported good results. One of his cases had been kept under observation about ten years. He did not like the infiltration in the cheek, because in one of his cases that proved to be malignant had acted in a similar manner; the mass proved to be an extension of the growth around the posterior surface of the superior maxilla. In one case, thought to be a fibrosarcoma with elastic fibres, the tumor grew from the vicinity of the Eustachian tube. The course of the case did not point to its being a sarcoma.

Dr. Ewing W. Day, of Pittsburg, said that he had unfortunately met with a number of such cases. One of them was a very extensive fibroma. The patient would not consent to removal of the superior maxilla, so he had made the incision as for that operation except not going under the eye. He had then cut into the maxillary antrum and cut away the inner wall of the antrum, leaving the nostril attached to the outer border of the bone. When the antrum and the nasal cavity were thus thrown into one cavity, he was able to reach the root of the growth, and remove it without producing much hemorrhage. He had been surprised at the wide field of operation thus obtained. This operation had been done three years ago, and there had been no recurrence. If he had to do the operation again he would leave only a ridge to anchor the nose to, and so prevent the ballooning that now takes place in this patient when blowing the nose.

Dr. J. A. Stucky said he believed that if this infiltration of the nose were left untreated it would require an external operation. From his own experience he felt that it was not possible to make a snare that would remove the tumor from MaKuen's patient. Mention was made of an exceedingly trying case of the kind that had fallen to his own lot.

Dr. J. O. McReynolds, Dallas, Tex., advised using a cold wire snare, and holding it in position while an assistant tightened the snare as much as possible. Having made a pedicle in this way, the galvanocautery loop should be thrown around the growth. This method would allow some of these growths to be removed that would ordinarily break snare after snare. A case was cited in which the superficial layers of the growth indicated only fibroma, but examination of the deeper ones showed sarcomatous elements.

Dr. M. D. Ledermann, of New York, said that he had some experience with Dr. Dawbarn's method of operating in order to starve out these growths in the rhinopharynx, and he would suggest that Dr. Makuen consider this method in connection with his case. A case was referred to in which the patient had been seen five years after the Dawbarn operation and there had been at that time no return of the growth.

Dr. Edward B. Dench remarked that Dawbarn's method embraced ligation of the external carotids and their branches, with complete excision of the ligated vessels.

Dr. G. H. Makuen said that it had been impossible to get the cold wire snare around the tumor because it extended so far down on the posterior pharyngeal wall. The patient and his family would probably not consent to any other radical operation.

(To be Continued.)

LARYNGOLOGICAL SOCIETY OF LONDON.

Seventy-fourth Ordinary Meeting, May 2nd, 1902.

E. Cresswell Baber, M.B., President, in the Chair.

The following report of the Morbid Growths Committee was read:

On Dr. H. Pegler's case of cystic growth of the septum (vide "Proceedings" for April, 1902, p. 103).

After examination of the specimen and sections submitted, the Committee report as follows:

1. The cyst was evidently of old standing, there being displacement and atrophy of the septum nasi and middle turbinate.
2. The wall of the cyst is composed of the fibrous layer of the periosteum covered with mucous membrane normal to the parts.
3. There is insufficient evidence on which to speak definitely as to the nature of the lining membrane of the cyst. If it was endothelial, no cells now remain.
4. There is no evidence of any embryonic tissue, e. g. nevoid.
5. Meningoceles have generally been seen in the middle line, and usually connected with other congenital deformities.
6. The Committee suggest the possibility of a cyst arising in a dilated lymph space of the nasal periosteum, which, perhaps, had a communication with the subarachnoid lymph space.

The following cases, specimens and sections were shown:

Sections of a Large Recurrent Papilloma, which seemed to Grow from the Left Maxillary Antrum.

Shown by Dr. Bronner. The patient, a woman aet. 40, had had left nasal obstruction for over one year, and for five or six weeks had noticed a purulent and offensive discharge from the left nostril. A large grey mass completely blocked the nostril. This was removed by the snare. A fortnight later there was recurrence. The nostril was scraped, and a large smooth cavity could be felt with the finger, corresponding in position to the antrum, but much larger in size. There had been slight recurrence of the growth,

which was removed by the snare. There was now very little discharge, and it was no longer offensive, and there had never been much pain or external swelling or hemorrhage. The symptoms at first seemed to point to epithelioma, but microscopical examination showed the growth to be papilloma. The fact that there had never been much hemorrhage, or pain, or external swelling, and that the growth had practically disappeared, also seemed to point to papilloma, from a clinical point of view.

Specimen of Sarcoma of Right Tonsil.

Shown by Dr. Walker Dowie. The patient, a woman æt. 58, when first seen, complained of a swelling of the right tonsil, which had been slowly increasing in size since the beginning of that year. It had come on without any apparent cause, and at first gave her only slight discomfort. During the next three months the affected tonsil slowly increased in size, and the patient lost flesh and strength.

She consulted another doctor, who proposed to excise the affected tonsil, but on her return two weeks later to have this done the tonsil was found to have increased so much in size in that interval that he had deferred operation. She could swallow with comparative ease. On examination through the mouth, a tumor occupying the position of the right tonsil was seen, somewhat resembling an hypertrophied tonsil. It was barely the size of an average walnut; it had the form of an enlarged tonsil, and was of a deep red color, with several greyish patches of superficial erosion distributed over its surface. It was firm to the touch, non-fluctuant, and palpation caused no pain. The faucial pillars were not adherent to the tumor, which was, as a consequence, freely moveable, and the lymphatics in the neighborhood were unaffected.

She was admitted to the infirmary with the least possible delay, and on August 23rd the tumor was removed under chloroform, through the widely opened mouth, and the growth was enucleated by the finger-nail and scissors. Firm pressure over the raw surface checked what bleeding there was.

Swelling and ecchymosis of the faucial pillars on the right side followed the operation, but this rapidly subsided, and the patient was dismissed on September 2nd with the parts completely healed.

On microscopic examination the tumor was seen to be a spindle-celled sarcoma. Towards the surface of the tonsil, however, there was a layer of well-formed connective tissue, covered by the epithe-

lial investment of the tonsil. This latter (not complete in the sections) presented no evidence of invasion by the growth. The tumor, however, in other parts has reached the surface. A spindle-celled sarcoma might, as is known, remain encapsulated for a considerable period, and the glands remain unaffected, and if recognized and enucleated whilst still encapsulated, there was every hope that the operation would effect a cure. Such being the conditions in the present case, this result was hoped for. The patient was not seen again till October, 1901, two years and two months after operation.

On examining the mouth, a small, smooth, rounded projection about the size of the tip of the little finger was seen springing from the soft palate at a level of the upper border of the right anterior pillar, and close to it. On palpation this projection and the surrounding parts of the palate and fauces were found to be the seat of an infiltration—hard, nodular, and firmly fixed.

Externally there was a fullness just behind the angle of the right lower jaw. On palpation this was found to be hard and fixed, and to nearly fill the space between the angle of the lower jaw and the tip of the mastoid process.

The woman's health was still fairly good; she was stout and florid, and the local manifestations had increased but slowly, the only additional complaint being that of pain and throbbing in the right ear, aggravated by lying down.

Specimen of a Fibrous Growth Removed from the Naso-Pharynx of a Boy aged 14.

Shown by Dr. Walker Downie. The patient, who was first seen on February 21st, 1901, had complete obstruction of the right naris for many months, and latterly the left naris had been similarly affected.

The naso-pharynx was very completely occupied by a large bluish-grey growth, the lower portion of which, rounded and smooth on the surface, projected below the level of the free border of the soft palate for fully half an inch during respiration, and during deep inspiration a much larger portion of the growth was exposed to view. This growth was removed by means of a cold wire snare introduced through the mouth. Its removal, though carried out slowly, and by torsion rather than by cutting, was followed by a very profuse hemorrhage.

On microscopic examination the tumor was found to be a richly

vascular and very edematous fibroma, consisting of a dense reticulum of curling fibres, and comparatively few cellular elements.

The operation was followed by continued improvement in the boy's health, and, so far, there has been no recurrence.

Specimen of a Fibrous Growth Removed from the Naso-Pharynx of a Boy aged 11.

Shown by Dr. Walker Downie. The patient had had difficulty in breathing through the nose for years, and for at least eighteen months he had snored loudly while asleep.

The naso-pharynx was occupied by a large fleshy growth which bled readily on manipulation.

By digital examination, under chloroform, the growth was found to spring from the vault of the pharynx. Its extirpation was attempted by means of a chain ecraseur passed through the nose, but this instrument broke while crushing through the firm fibrous pedicle. It was latterly removed by torsion, while firmly grasped by a curved wire rope ecraseur. Twelve months later the left superior maxilla began to swell, and the left naris became obstructed. The left upper jaw, which was then found to be the seat of a sarcoma, was excised, and the result has been subsequent immunity.

Microscopic examination showed this tumor to be a dense fibroma, in which, however, the cellular elements were comparatively numerous.

Specimen of Sarcoma of the Fauces.

Shown by Dr. Walker Downie. The specimen consisted of the soft palate, fauces, pharynx, larynx and gullet. The patient, a man aet. 33, had been first seen on February 26th, 1901. He then complained of sore throat, pain on deglutition, and huskiness of some three months' duration. On examination, the fauces were seen to be in a state of deep congestion, and the left faucial pillars and the greater part of the buccal pharynx ulcerated.

Chronic acid solution was applied to the raw surfaces, and mercury with iodide of potassium was prescribed. He improved very greatly up till the end of June, when, without any apparent cause, his cervical glands became enlarged, and he again experienced difficulty in swallowing.

On August 17th, 1901, he was admitted to hospital, and the local lesion was found to have extended very considerably, both in area and in depth. Not only were the left faucial pillars and the

buccal pharynx ulcerated, as when first seen, but the whole nasopharyngeal cavity was raw, and the ulceration had extended down to the opening of the gullet. At the lowest part of the pharynx the mucosa was undermined, and a pocket with gaping mouth was found on the left side, into which food entered, and, to further complicate matters, the posterior wall of the larynx—the arytenoids, and interarytenoid membrane—was greatly swollen. He was, as a consequence, quite unable to swallow any food (in attempting to swallow food it returned through his nose), and a bougie could not be passed into the gullet. It was therefore necessary to resort to rectal feeding, which was maintained till death. The odor of the discharge secreted by and covering the raw surfaces was not only foul, but loathsome.

On September 20th he was pale, cachectic, and exhausted, as much from septic absorption as from insufficient food.

On admission to hospital the cervical glands on the right side formed a swelling considerably larger than a duck's egg, and this swelling slowly increased in size till four days prior to death, when it very rapidly shrank, and at death was scarcely perceptible.

The man was married. His wife had had no miscarriages, and he was the father of a healthy child of seven months. Up till about twelve months ago he had enjoyed good health, with the exception of frequent attacks of sore throat, which, from his description, appear to have been of the nature of simple acute tonsillitis.

The results of the post-mortem examination were wholly unexpected. The extensive ulceration of the palate, fauces and pharynx, accompanied by swelling which resembled inflammatory edema, might well have passed for a syphilitic lesion. But on proceeding further new growths were found in the lungs, the liver, and the kidneys, in all of which the essential features presented were those of round-celled sarcoma.

Case of Laryngeal Stenosis in a Man aged 50, resulting from a Large Syphilitic Ulcer of Left Side of Larynx.

Shown by Dr. Donelan. Patient was shown at November and January meetings on a question of diagnosis, as there was some suspicion of malignant disease. The ulcer is almost healed, but the patient is shown now on account of the stenosis which appears to be increasing, and in evidence of the fact that even extensive syphilitic disease of the larynx may be successfully treated without any local measures.

Case of Syphilitic Contraction of Posterior Pillars of the Fauces in a Man aged 44.

Shown by Dr. Donelan. The patient was admitted to the Nations Hospital last September suffering from pneumonia and a large tertiary ulcer, involving the naso-pharynx, posterior aspect of vomer, and back wall of pharynx. During his subsequent mixed treatment as an out-patient contraction of the cicatrix gradually took place, and the posterior pillars were gradually drawn together until they are as might be seen now.

Complete Occlusion of Right Nasal Vestibule in a Man aged 32.

Shown by Dr. Herbert Tilley. The condition followed the insertion of a strong styptic which was applied to check severe bleeding during an attack of pneumonia. The cartilaginous portion of the septum deviated very markedly to the right, and it was thought probable that the occlusion was the result of cicatrization of the two closely apposed surfaces, the ulceration of which had been induced by the styptic.

Dr. Watson Williams thought it was an interesting point that this condition should have followed immediately upon an attack of acute pneumonia. The question of pneumococcal ulceration was so new, and so few cases were known of or described, that it was impossible for him to do more than throw out a suggestion that some of these cases of ulceration might be due to pneumococcal infection.

Advanced Destruction of Intra-Nasal Structures Associated with Suppuration of the Right Maxillary Sinus.

Shown by Dr. Herbert Tilley. The patient, a man aet. 42, had had syphilis six years ago, and the intra-nasal structures had been extensively destroyed. A portion of the vomer alone remained of the septum, and the right middle turbinal was absent.

The exhibitor wished for the opinion of the Society as to whether such a condition might not arise independently of syphilis, and as a result of septic infection of the nasal mucosa.

The President suggested that this might be a case of syphilis; it looked very much like it.

Dr. Pegler said that Dr. Bennett, who was unable to stay to the discussion, requested him to say that he did not see any parallelism between his case and Dr. Tilley's.

Case of Great Symmetrical Thickening of the Upper and Anterior Part of the Nasal Septum.

Shown by Dr. Lambert. The patient, a man aet. 33, had been under treatment for the past twelve years for nasal obstruction. This apparently depended upon a very marked thickening in the neighborhood of the tubercle of the septum. This thickening was so great that the case had been diagnosed as a cyst of the septum. It had been cut away and cauterized many times, but had always recurred after a few months or a year. Dr. Lack first saw him about a month ago, and with snare and cutting forceps removed the growth from one side, which is now clear, but the curious growth can still be seen on the other side. If this swelling was simply an exaggeration of the boggy thickening of the septum often seen in this region, it was by far the most marked example he had ever met.

The President asked whether there was any suppurative disease in the left maxillary sinus.

Dr. Hill thought that there was some suppuration present, but he imagined that that was not the point which Dr. Lack intended to emphasize in connection with the case; it was rather the recurrence of the large thickening of the septum after it had been freely cut off in large portions with, presumably, a knife.

He had almost come to the conclusion that there was a tendency in all soft thickenings of the septum to recurrence after removal, and sometimes even in hard structures also.

Dr. Pegler had had an almost exactly similar case under his care. He thought these cases were probably syphilitic in origin.

Sir Felix Semon was glad to hear he was not the only unfortunate person with regard to these cases. It had so often struck him after operations on the septum that the difficulty one had in subduing the subsequent swellings was very great, and literature afforded hardly any assistance as to the after-treatment of these cases.

Dr. Lack was surprised to hear there was often difficulty in preventing recurrence after operations for thickened septum. He had small experience in cases of this kind, but in bony thickenings of the septum he had found no recurrence after operation.

Case of Inherited Syphilis of Nose, Pharynx and Larynx, with Complete Occlusion of Anterior Nares.

Shown by Dr. Lambert Lack. The patient was a boy who had come under observation three weeks ago with complete occlusion of the left nostril and a red granulating ulcer of the right nostril, with nearly complete atresia of this side also. The soft palate was infiltrated with small nodular patches, and in places there was slight ulceration and scar tissue. The upper part of the larynx was similarly affected, the epiglottis being partially destroyed, and the stump greatly thickened and distorted. Under treatment with potassium iodide internally, and mercury ointment locally, the ulceration of the right nostril had healed, and there was now complete atresia of both anterior nares, with remarkable little sign of loss of tissue or of scarring.

Sir Felix Semon doubted from the appearance of the larynx whether this case was due to syphilis alone, though that disease might, in part, be the cause. He would think lupus a more probable explanation of the condition, and had no hesitation in saying that the appearance of the epiglottis was almost typical of lupus. Of course, the nose made the diagnosis doubtful, as did the result of the treatment. He thought some tissue ought to be removed and examined for tubercle bacilli.

He drew attention to the fact that whilst there was complete occlusion of the nose, there was no deafness.

Dr. Lack admitted that the condition of the palate and larynx strongly resembled lupus, but considered the favorable result of treatment pointed strongly to syphilis.

Case of Large Laryngeal Growth in a Woman.

Shown by Dr. T. W. Bond. Patient, a married woman, had had some huskiness of voice for thirteen months. She had had no cough, no difficulty or pain in swallowing, no night sweats, and temperature was normal. There was no history of syphilis. She had had one severe attack of stridor. There were no enlarged glands.

On right side of larynx there was a large red mass, firm to palpation, extending from below cord to level of tip of epiglottis. The right arytenoid and the ary-epiglottic fold were merged in the mass. The case was shown for the purposes of diagnosis.

Dr. Dundas Grant took the growth to be a sarcoma, and wished to know whether Dr. Bond had also come to this conclusion.

Dr. Lack said some members might remember a somewhat similar case he had shown to the Society in February (see vol. ix, p. 60). This patient had marked edematous infiltration of one side of the larynx, and especially of the arytenoid, and had been under observation for three months, and taking iodide of potassium. Quite lately, however, tubercle bacilli had appeared in the sputum, and Dr. Lack considered that the large majority of doubtful cases of this kind proved, ultimately, to be tuberculous. He thought this should be the diagnosis of Dr. Bond's case.

Mr. R. Lake thought the growth here looked as if it had been palpated, and he would like to know whether the redness was due to injury by a finger.

Dr. StClair Thomson said that this case reminded him of a case he had shown to the Society of a growth in a similar situation in a man about fifteen months ago. The patient was somewhat older than Dr. Bond's patient, being forty-five. It was, when shown, taken by the Society to be a malignant growth, the patient at the time being without any symptoms of tuberculosis. Some two or three weeks after showing him his health broke down, and tubercle bacilli were found. Tracheotomy had to be performed, and the man died of tuberculosis. He thought he had previously mentioned that Dr. Horne had possession of the larynx, which was distinctly tubercular.

Dr. Bond said there were several points against the tubercular supposition; so far as he could learn from the husband, there was no loss of weight, no night sweats, and no cough. When he himself took the temperature for the first time it was normal. To-day, at the end of the examinations, it was 100° , but as she was at present suckling an infant four months this rise could easily be explained.

It was a firm feeling growth, and he had not palpated it that day. He saw the woman six days ago, when there was a red patch on the surface of the tumor. He did not know whether anyone had palpated the growth to-day. It was open to all to say that it might be a sarcoma, for there was some justification for this opinion. But there were no glands enlarged, and there was a history dating back thirteen months. In such a case one might on operating find the glands enlarged, although they could not be made out as enlarged from a surface examination. He intended to watch the patient, and would be glad to give a further report later on.

Glosso-labio-laryngeal Paralysis, with Complete Paralysis of One Vocal Cord and Abductor Paralysis of the other.

Shown by Dr. StClair Thomson. The case was specially interesting, as the progress of the laryngeal paralysis had been watched from an early stage. The patient had complained of thickness of speech for some twelve months. In November last there was only paresis of the abductor muscles. A month ago Dr. Thomson had tried to bring the case before the Society as one of complete double abductor paralysis. Since then the affection had made further progress, for it would be noted that the left cord was completely fixed in the cadaveric position, while the right cord failed entirely in abduction, and on phonation crossed the middle line in its attempt to close with the lifeless left cord.

Phonation was unimpaired. The vowel sounds are successfully produced, but there is distinct failure of some of the consonants, both labials and dentals. There is conspicuous speech defect owing to failure of co-ordination, yet it is difficult to detect any appreciable paresis of the muscles of the lips; the tongue can be protruded with apparent facility and without tremor, and the soft palate shows no failure in its reflex movements. He can inflate his cheeks, but cannot whistle. There is no dysphagia, but occasional spasm and coughing on drinking. The reflexes and pupils are normal.

The President said an important question in this case was whether or not tracheotomy should be performed, and it would be valuable to have the opinion of members on that point. There was scarcely any interval between the cords. He inquired as to whether there was much anesthesia of the larynx.

Dr. Watson Williams suggested that as the paralysis had developed so rapidly, the probability was that before very long, there being already complete paralysis on one side, there would be complete paralysis on the other side also. The danger of asphyxia would then be greatly lessened. Any operation might only still further complicate the case, and add a new danger.

Dr. StClair Thomson asked whether tracheotomy was in any way contra-indicated from the existence of anesthesia of the larynx, which was often present in these cases. Should he be hastening on a fatal termination by doing tracheotomy by reason of the food going down the trachea, which it already showed some signs of doing? The patient was in a rather pitiable state. He was at present able to earn his own living and talk a little, and when it was explained to him that even if operative measures were taken he would be able to talk no better than before, and would probably not be able to continue earning his living, he did not naturally seem inclined to undergo any operation. If anyone had any experience of a case of this sort in which tracheotomy had been performed, he would be very glad to hear of the results.

(To be Continued.)

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SELECTED ABSTRACTS.

Epistaxis in the New-Born.—L. D'ASTROS.—*La Pratique Medicale*, April, 1902, No. 4.

Epistaxis, not uncommon in early childhood, is relatively rare in the newborn, and it constitutes in these a symptom of grave importance. It is very rarely abundant, usually very little, consisting sometimes only of a few drops of blood.

The conditions in which it is found are of three classes:

1. It may be secondary to a nasal infection, or to a coryza; especially may it appear in the course of a syphilitic coryza.
2. It may be secondary to a grave constitutional condition, infectious or toxi-infectious, without any special nasal localization. Hereditary syphilis may determine epistaxes independent of a coryza. This may also be the case in certain septic infections. It is also often associated with other hemorrhages, as of the skin, of the intestines, etc.
3. In some cases, epistaxis appears as a primary and localized manifestation in the newborn, which may previously have appeared perfectly well. These are the more interesting cases from a clinical standpoint. In the first place, epistaxis may be the first physical manifestation of hereditary syphilis. Excluding syphilis, epistaxis may form the primary symptom of an infection in the nasal passages, and limited for some time to the nasal passages; later it may reach the middle ear by way of the Eustachian tube. The extension to the lower respiratory passages is frequent, as in the development of bronchitis and of broncho-pneumonias. Finally it may take the form of septicemia of the whole organism with its possible consequences (osteomyelites, convulsions, etc.)

We should therefore assign a great semiologic value to epistaxis in the newborn; an important diagnostic value especially when it is dependent on an infectious condition, whether active or latent. The prognosis is always grave, not so much by reason of the abundance of the hemorrhage, as on account of the infectious condition which it may indicate.

SCHEPPEGRELL.

Asthma of Nasal Origin, Its Radical Cure.—P. J. H. FARRELL.—*Illinois Medical Journal*, May, 1902.

The author accepts the idea that there is a general nervous pre-disposition to the disease, and that the paroxysm is brought about by irritation in the upper air passages. Although the nasal cavities may disclose nothing in particular at the time of examination, but if during an asthmatic attack an application of cocaine be made to a suspicious point, such as a turbinate resting against the septum, or a circumscribed edematous patch, the spasm would relax at once. In the author's experience 80 per cent of such cases have been entirely cured, the remaining 20 per cent benefited, by attention to some nasal condition.

STEIN.

The Controlling of Hemorrhage after Tonsillotomy.—HEERMANN.—*Archiv. fuer Laryngologie*, Vol. 12, No. III.

The writer cites case of a man, aged forty-six, who had a tonsil removed. Severe hemorrhage followed the operation, which would not yield to the ordinary methods, such as compression, etc. The hemorrhage was immediately checked when he resorted to the method which has been much in vogue for the past twenty years in the City Hospital of Cologne, viz., passing silk ligatures through the anterior and posterior pharyngeal pillars and tying them securely together. The patient suffered no inconvenience from the ligatures. The operation is not very difficult, with a properly constructed needle holder, and the writer recommends its being used more frequently, especially when the patient has reached a certain age, with a predisposition to hemorrhage, and medical aid cannot be obtained.

M. A. G.

Empyema of the Frontal Sinus.—H. BERT ELLIS.—*Medical Age*, May, 1902.

The author briefly reviews the history, anatomy, pathology and methods of treatment as found in all text-books on the subject, and closes his article by citing three cases illustrating the different methods of relieving the trouble.

STEIN.

Injuries of the Membrane Tympani.—SAML. G. DABNEY, M.D., (Louisville, Ky.)—*The Louisville Monthly Jour. of Medicine and Surgery*, June, 1902.

In this comprehensive exposition the principle conclusions arrived at are:

That the majority of ruptures are caused by boxing the ears, hence this method of chastisement should be condemned.

Injudicious efforts at the removal of foreign bodies are more dangerous than the body itself.

Persons with diseased Eustachian tubes run some risk in working caissons. The risk may be reduced by frequent inflations.

In cases of injury to the ears careful examinations should be made before using syringe or instillation, but a simple injury be converted into a tedious or dangerous suppuration.

In fractures of the temporal bone, or base of the skull, the diagnostic importance of a serous discharge depends upon the time of appearance. Immediate appearance means cerebro-spinal fluid; after 24 hours, probably due to inflammation of the middle ear.

F. C. E.

Complementary Menstruation from the Ear.—DR. CHARLES GRENOBLE, (France).—*Medical Bulletin*, January, 1902.

The subject was a woman fifty-eight years of age. Seven years previously it was first noticed that with the advent of her menses she experienced heaviness and congestion of the head, localizing itself finally in the left ear, with a very distressing sensation of fullness in that organ, intolerable buzzing, ceasing suddenly with the advent of the menses, and a discharge from the left nostril of an orange-red color and of extremely fetid odor.

Three years ago the discharge that had heretofore come only from the nose now also came from the left ear, also of the same color, odor and corresponding to the menstrual epoch, but with the addition of intense itching of the auditory canal.

Examination of the ear showed nothing abnormal excepting a small perforation at the posterior-inferior part of the drum membrane and almost complete anesthesia of all the parts. Hearing for low voice about half a meter. Inflation negative. No abnormality of nose or pharynx.

STEIN.

The Use of the Ice Coil in the Abortive Treatment of Acute Inflammation of the Mastoid Process.—E. B. DENCH, (New York).—*N. Y. Eye and Ear Infirmary Reports*, Jan., 1902.

This paper is largely a repetition of the author's previously expressed opposition to cold as an abortifacient of developed mastoid inflammation in which he has contended, as here "that any attempt to abort an inflammation within the mastoid by means of the local application of cold is an extremely dangerous procedure." However, the author is willing to forego his well known dilection for operative procedure in all mastoid inflammations, in certain cases "where the surgeon has the patient under observation from the very inception;" in such circumstances he thinks "the local application of cold may be of considerable value." In cases seen after the middle ear symptoms have existed for some time, he would institute free drainage through the external auditum meatus, and keep the parts as aseptic as possible, by frequent irrigation of the canal by injections of a mild antiseptic solution. At the end of 48 hours if the case has not progressed toward recovery, opening of the mastoid is indicated. In such cases there will be few not showing extensive involvement of the bone. Should healthy bone be entered the patient's recovery will not be jeopardized in the least, and in the obscure cases convalescence will be hastened by drainage.

F. C. E.

Report of a Case of Morphomania, with Extravagant Claim of Aural Disease.—FRANCIS W. ALTER.—*American Medical Compend*, February, 1902.

The patient was a woman of 36 years. First complained of a fullness and some pain in right ear, which led her to the employment of large doses of morphine for the relief of the symptoms. On examination of the ear nothing was found excepting a slight evidence of otitis media catarrhalis chronica. Hearing but slightly diminished. Patient complained of exquisite pain and tenderness over mastoid region. The author believes that in order to satiate the craving for morphine she created a seemingly valid reason, both to herself and her friends by complaining of the pain in her ear.

STEIN.

Action of Ozone in Whooping Cough.—DELHERM.—*Archiv. de Med. des Enfants*, May, 1902.

The author has treated twenty-eight cases of pertussis by inhalation of ozone. He gives a description of the portable apparatus. In substance the following conclusions may be drawn: While ozone possesses decided antispasmodic properties, it is not a specific for whooping-cough. It should only be used during the paroxysmal, as it has no effect in the catarrhal stage. Three to four inhalations of ten minutes' duration should be given during twenty-four hours. It diminishes the congestive phenomena of whooping-cough, and decreases the number of attacks.

The number of attacks was not diminished in cases with bronchopneumonia involvement, but the period of the paroxysm was shortened and the violence of the attacks lessened. Ozone is not at all toxic and could be given in connection with other remedies, when the method was followed out as described. M. A. G.

Anesthesia of Mucous Membrane, with 25 per cent Alcoholic Solution of Cocaine in Operations on the Nose, Pharynx and Larynx.—WROBLEWSKI.—*Archiv. fuer Laryngologie*, Vol. 12, No. III.

The author has much to say in favor of the anesthetic action of the alcoholic solution of cocaine. He had never seen any symptoms of cocaine intoxication, although his experience included some fifty children as well as adults. He claims that the alcohol is an antidote. The best method of preparing the solution is to place the cocaine and alcohol in a test tube, heating gently to the boiling point. The cocaine dissolves very quickly and the solution remains clear permanently. Considerable smarting results from the first application of the solution, but, by applying a weak, watery solution of the same drug this can be avoided. Complete anesthesia can be produced with a very small amount of the solution. The writer has applied it in operations on the nose and larynx, as well as for removal of tonsils and adenoids with satisfactory results.

M. A. G.

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ORIGINAL COMMUNICATIONS.

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CHRONIC SUPPURATIVE OTITIS MEDIA. WHEN SHOULD RADICAL SURGERY BE EMPLOYED IN ITS TREATMENT, AND OF WHAT SHOULD THIS CONSIST?*

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Otolological Society, etc.

Wrote William MacEwen¹ years ago: "Chronic otorrhea is much too lightly regarded and is frequently considered as a mere inconvenience, instead of a menace to life. The disease progresses insidiously, and one cannot be certain as to when and where it may end. It is true that many affected with chronic purulent otitis media pass through a long life without suffering obtrusively from it and may die from causes neither directly or indirectly associated with it. On the other hand, the disease is one which advances insidiously, often without pain, until very extensive destruction of the middle ear and mastoid antrum and cells, with thinning of their osseous walls, and serious invasion of the meninges, the blood vessels and the brain itself, occurs.

"As long as the middle ear and its recesses are the seat of pus secretion, they are liable to become a focus for pathogenic organisms, which may find their way into the general circulation, or by extension invade the meninges and brain. The records of most aural hospitals show that their patients are all confined to the earlier decades of life. Under these circumstances all persistent,

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purulent discharges from the middle ear ought to be regarded seriously, and the medical attendant ought not to rest satisfied until the discharge is cured."

These discouraging chronic cases of suppurative otitis media are in every clinic; they are among the patients in every man's private practice. The embryo otological specialist begins his studies by wiping them out—he will still be wiping them out to the end of his otological career. Why are they so common? Why are they not cured before they reach the suppurative stage? I think it is because, in spite of all that has been written and spoken in recent years concerning this subject, the general practitioner does not yet fully appreciate the danger to the organism which resides in the purulent diseased conditions of the ear. When the profession and the community as a whole begin to realize that, as Bayard Holmes has stated, mastoid antrum disease is the appendicitis of the head; and that every case of chronic suppurative otitis media is a slumbering volcano or a charge of dynamite liable to explode at any time—then, and not till then, will the suppurative diseases of the ear be treated with a full appreciation of their possible gravity.

That the serious sequelae of ear disease, such as general pyo-septicemia, cerebral and cerebellar abscess, and the affections of the sinus and jugular follow these chronic, usually little-regarded suppurative diseases, it is needless to argue before this society. I have recently looked up the records of sixty-four cases of serious brain complications or sinus phlebitis, mostly cases of cerebral or cerebellar abscess.² Of these, 53, or 82 per cent, were caused by old otitis media purulenta, usually of many years' duration, and occurring for the most part in young people; while 11, or 18 per cent, followed cases of acute otitis media suppurativa. Hammer-schlag,³ in 187 cases of brain abscess, gives 149 cases as proceeding from chronic otitis media purulenta; 37 from acute otitis media purulenta, and one from subacute; giving a percentage of 25.3 from acute and 75 from chronic causes. Grunert⁴ has stated that 91 per cent of the brain abscess cases are sequelae of chronic otitis; and has also reported from Schwartz's clinic 38 cases of the serious sequelae of suppurative otitis, of which 29 were chronic cases and 9 acute. If the mean of these sets be taken it will be found that about 80 per cent of all the reported cases of serious brain or sinus trouble are the result of chronic purulent otitis.

What proportion of these cases occur in any one man's practice?

And what is the probable liability of serious brain trouble in the individual case? I have no exact statistics covering this point, but considering the number of these cases which come and go in every clinic and in every physician's private practice, I am inclined to think that it is comparatively small. Stetter, of Königsberg,⁵ reports 3,450 cases of purulent ear affections, 1,085 of whom suffered from acute purulent otitis, and 2,365 from chronic purulent otitis. On these he did 192 operations, 130 being the Wilde incision, which can be disregarded as an operation of any account; in 40 he opened the mastoid antrum, and in 22 he did the radical operation for purulent otitis. He does not state in his report for what purpose he did the radical operation, or whether any of these cases had dangerous sequelae, such as brain abscess or sinus trouble. In 9,000 autopsies at Guy's Hospital in London, 57 cases, or two-thirds of one per cent, died of intracranial complications from ear disease. Gruber found 232 cases of death from the same cause in 40,000 autopsies, about one-half of one per cent.

I am inclined to think that each man's individual experience is that, relatively to the number of cases of ear disease seen, serious complications are comparatively rare, either because the uncured cases—for I am sure that a large proportion, if not most of the chronic cases, remain uncured, i. e., are not permanently cured—have died of some other affection, or else when the serious complication has occurred it has been wrongly diagnosed. In my own experience I recall four cases in which death resulted from the serious complications of chronic suppurative otitis—one of brain abscess reported elsewhere; one of cerebral and cerebellar abscess in a child of four and a half years, following three years of chronic suppurative otitis; one of pyemia four months after radical operation too long delayed; and one of probable brain abscess following otitis media suppurativa chronica accompanied by hemorrhage from the ear and hemiplegia.

What then is our duty in connection with these cases? Because dangerous complications occur but seldom, shall we hesitate and fail to put before each individual case the possible dangers confronting him? Shall we be content to syringe and swab, to try this powder and that powder and this remedy and that remedy, knowing full well that the individual is constantly carrying a small charge of dynamite around in his head? The question is one not always easy to decide. Nearly every case improves under treatment and many dry up for a time, but they are almost sure to start up again sometime or other.

So I think it is every aurist's duty after a reasonable length of time—which reasonable length must be very elastic and must depend upon the circumstances in each individual case, not being stated in terms of days or weeks—to put before his patient the question of a radical operation; stating the possible dangers incident to a suppurating ear, and explaining that although no serious complication may result, the danger of the same is always present, and when it comes there may be no warning, as was well illustrated in a case of brain abscess of my own, in which development of the abscess occurred without any premonitory symptoms; and, furthermore, that there is always absorption and more or less favorable influence upon the bodily organism from the presence of any suppurating cavity.

The question of the influence of operative measures upon the hearing power is not very much of a factor in these cases; since the danger to the individual is more to be considered than any possible influence which the operation may have upon the hearing power. It is usually benefited by any operative procedure, since material which is a hindrance to the passage of sound waves is removed by the operation, but it may now and then be diminished.

I am well aware that to urge any kind of an operation on a person who is suffering neither pain nor headache, and having only a chronic discharge from the ear, concerning which we are frequently told by the patient that it is only occasionally troublesome, requires some courage, as the individual is apparently suffering but slight discomfort. Nevertheless I think we ought to do so, even though I must confess that up to the present time I have not had the moral courage to invariably urge it upon my own patients. On the contrary, I fear that I have been in the habit of easing my own conscience and the minds of my patients by telling them, after accomplishing an apparent cure, that the condition may never trouble them again, but to return to me at the very first sign of trouble in the ear. An operation is always regarded by the laity with great dread, and the question of loss of time, the fear of the result, and the cost, are factors which always have a powerful influence. The question is easy of decision in the presence of manifestly serious symptoms, as pain or fever, but when proposed as a preventive of a possibly serious condition, the chances of its rejection are much greater. The time is coming, however, when we are going to urge upon all of these cases the need and desirability of a thorough cure; and I refer now quite as much to the cases in which there are no apparently serious symptoms, but simply a more

or less constant discharge of a small quantity of foul or slightly foul pus, in which examination of the ear shows one or more perforations, with only remnants of the malleus and anvil or perhaps their entire absence, and in which there is the probability of the invasion of the mastoid antrum or the presence of a cholesteatomatous condition.

The question of operation being before us, it resolves itself to a choice between two methods: first, that of the clearing out of the contents of the tympanic cavity through the external canal known as ossiculectomy; second, the so-called radical operation, with its various modifications. Before deciding upon any procedure it should be borne in mind that the difficulty of healing chronic middle-ear suppuration is due to incomplete drainage of the diseased parts and the consequently constant danger of farther and farther involvement of the deeper structures; hence the operation chosen should be one that allows of healing taking place from the bottom of the diseased cavity and provides for free drainage during the healing process.

The operation of ossiculectomy has the advantage that it can be done through the external canal, requires no external wound, has but a short period of deprivation of work, and can sometimes be done without an anesthetic, although if thoroughly done I consider general anesthesia always requisite. In a certain number of cases in which the purulent process seems to be confined to the attic and carious ossicles, the removal of the remnant of the drum, malleus and incus, with the curettement of as much of the attic and adjacent area as can be reached, seems to be followed by satisfactory results; and many aural specialists advise the doing of this operation before having recourse to anything more radical. In the several cases in which I have performed this operation it has been followed after a longer or shorter time by complete cessation of the discharge. Several of these cases I have been able to observe over a period of several years, and I think the results have been satisfactory.

R. Lake⁶ has reported 50 cases of ossiculectomy, of which 42 were cured, three had temporary relapses, and the remaining eight patients disappeared before a cure was effected. Improvement in the hearing power was noted in 21 cases, in three of whom the hearing returned to normal. The average age was 22 years, and the average duration of the disease 13 years. He thinks that an uncomplicated otorrhea which has resisted all forms of treat-

ment for six months is a case for ossiculectomy, which is especially imperative when the perforation is situated in the attic or upper posterior segment of the drum-head. He says: "The indications for the operation are briefly as follows:

"1. Intractable disease of the attic with a perforation in Shrapnell's membrane, especially if accompanied by definite caries or deafness.

"2. Intractable disease with perforation in the posterior superior quadrant.

"3. Intractable disease with considerable destruction of the membrane in any other situation.

"4. Residual deafness, after suppuration, without nerve deafness.

"Any more serious condition becomes a case for the radical operation, but in the foregoing there is justification for attempting to avoid more serious measures."

Randall, of Philadelphia,⁷ has recently stated that he has yet to see a single brilliant or even a real success from the employment of this operation.

Holmes, of Cincinnati,⁸ says: "While it is true that removal of the ossicles facilitates the cure of diseased parts in the cavities, because permitting a more ready application of medicines, yet the thorough exposure and removal of all affected parts at once by surgical means, under strict aseptic precautions—as is practiced in other portions of the body under similar conditions—is far more scientific than to submit the patient to the tedious process of waiting for nature to cast off the necrosed tissue."

This operation of ossiculectomy has certain disadvantages in that the attic is not visible; the curettage, even when, as ought to be the case, the bony wall immediately above Shrapnell's membrane is removed, is mostly done in the dark; and one can never be sure that the disease is thoroughly eradicated, or whether when the operation is finished there is not a diseased tract leading into the mastoid antrum still left. The operation is also not wholly devoid of disagreeable consequences. One of my cases, in which the curetting was carefully done, was followed by a facial paralysis, which persisted for some months but finally disappeared. Disagreeable nausea and vertigo occasionally follow for a longer or shorter time. The time that the person has to remain away from work is from a week to ten days. Although my experience has been that a cure usually results, this is not always the case, and one cannot be sure that no further trouble will ever manifest

itself. One of my patients who was operated upon in a neighboring city by a perfectly competent aurist had a return of the discharge a few months after the operation, and this persisted for months in spite of every effort at cure; while one of my own cases had a slight, though not persistent discharge appear six months after operation and apparent cure.

Therefore, it seems to me that the operation of ossiculectomy ought to be chosen only in those cases in which in all probability the suppurative process is limited to the ossicles and their immediate vicinity, and in which cholesteatomatous masses are not present. The presence of the latter should always lead one to decide in favor of the radical operation. Even when ossiculectomy is indicated and advised, it should always be stated to the patient that it is an operation in which a cure is possible, but by no means sure, and that further operation of a more radical sort may be demanded—that it is done as a provisional measure in the hope that the other operation will not be necessary.

The observation of a large number of cases seen abroad last summer, together with my own very satisfactory experiences with the radical operation, has made me much more inclined to urge the patient to submit once for all to an operation which gives every hope of bringing about a permanent cure. After seeing the good results obtained in a large number of cases operated upon for the cure of chronic purulent otitis in the clinics of Urbantschitsch and Politzer—cases such as when I was formerly a student in Vienna they were accustomed to treat with the usual syringing, swabbing, etc., and of the same character that I myself had been in the habit of treating in a similar manner—I came home determined to urge upon my own patients suffering from chronic purulent otorrhea that they allow me to do the radical operation, and so bring about a permanent cure.

According to Koerner,⁹ the radical operation is indicated as soon as the diagnosis of a chronic purulent middle-ear inflammation is positively made; and in cases in which the diagnosis of bone involvement is uncertain the operation is to be done as soon as there are symptoms of pus retention, or when there is hyperostosis in the canal, preventing a proper view of the deeper parts and the proper treatment of the purulent condition; whenever conditions are present that favor the origin of intracranial complications, such as signs of purulent inflammation in the labyrinth or facial canal; and always at the very first signs of intracranial complications of any

kind. He, however, qualifies these indications by saying that he knows of no case, and has never found any in the literature, in which a semi-mucopurulent inflammation in the antrum, without hindrance to the outflow of the pus discharge, has ever led to intracranial complications, a statement which may perhaps be open to question, or at least not in accord with the experience of many observers.

In 1893, Schwartze¹⁰ wrote that the radical operation is indicated "as a prophylactic operation against fatal results developing from fetid middle-ear discharge without any visible inflammation of the mastoid, and without signs of pus retention (pain, fever) whenever, after a careful examination, it is proven that the seat of the purulent secretion is not limited to the tympanum." The experience of otologists for the last nine years has only confirmed the truth of this observation.

The radical operation consists in throwing the cavities of the middle ear, attic and antrum into one, with the removal so far as possible of all carious or diseased bone and the ossicles, provided there be any of the latter present, with the exception of the stapes.

The usual mastoid operation, commonly spoken of as Schwartze's, is not adapted for the condition under consideration. There are two methods of performing the radical operation. The first is that of Stacke, which consists, after making the posterior incision as for the usual mastoid operation, in drawing forward the membranous external canal, and chiselling backwards at the posterior superior angle of the bony canal down into the attic and thence into the antrum, cutting away the external attic wall, so that when the operation is finally finished a probe could be passed from the roof of the tympanum directly out without encountering any sharp ridge, leaving a perfectly smooth single cavity.

The other operation is that of Zaufall, sometimes called Schwartze-Stacke, as it is a combination of the two. This is more easily performed, and seems to be preferred by most operators, although Randall states that he much prefers the procedure of Stacke as originally described to that of any of its modifications. Briefly, the operation of Zaufall consists in finding the mastoid antrum in the usual way, cutting away the entire posterior bony canal down to the hard bone through which the facial nerve passes (the Fallopian canal), and then clearing out the cavity after the method of Stacke. This operation has the advantage that it furn-

ishes room in which to operate, allows one to determine better the character of the mastoid bone and to remove as much of it as may be necessary, gives a better point of vantage in case it becomes necessary to lay bare the lateral sinus wall or to remove the tegmen tympani, and allows one to make a more satisfactory plastic than the method of Stacke; and this is the operation I have myself performed in all of my cases.

Without going into the details of the operation, certain points in connection with it are to be mentioned. A good light is necessary, preferably a forehead electric light, the rays of which can be thrown down into the cavity. The mastoid bone in most of these cases is usually sclerosed and very hard. The lateral sinus is frequently much closer to the external canal than in the average; hence in chiselling toward the antrum one should keep pretty close to the line of the external canal, enlarging the upper part of the funnel as one proceeds downwards. As soon as the antrum is reached a protector is carried into the attic, and the remnant of the external canal cut away with the protector in position. This is necessary to avoid wounding the facial nerve and the semi-circular canals. The anterior wall of the attic is entirely cut away, and all sharp corners rounded off. It has not been my practice to cut away all of the mastoid cells, or indeed to go beyond this area, except when there is manifest indication for so doing, and this should, I think, be the guiding rule as to how extensive an operation we shall do in the mastoid in these cases.

When the cavities have all been thrown into one, all surfaces and ridges are made perfectly smooth, so as to favor rapid epidermization. The condition of the walls of the tympanic cavity can then be determined, the ossicles and the remnant of the drum removed, and the surface curetted as may seem best. In connection with the curettement it must be remembered that the bony covering of the facial nerve may be absent in places, and that all curetting should be away from rather than towards it, and should also be away from the region of the stapes. The relation of the tympanic cavity to the jugular bulb and the carotid artery should also be borne in mind.

The danger of injury to the facial nerve is not entirely theoretical. In one case with acute symptoms following an old purulent otitis, slight facial paralysis followed, which, however, gradually passed away. Facial paralysis in a case in which one has operated purely

for the relief of chronic suppuration is an accident to be avoided rather than invited, even though it does subsequently get well.

The entrance of the Eustachian tube should be thoroughly curetted, as I had considerable annoyance in the after-treatment of one of my cases from the formation of granulation around the entrance of the Eustachian tube, which trouble was almost entirely remedied in succeeding cases, in which I took particular pains to thoroughly curette the tympanic opening of the Eustachian tube.

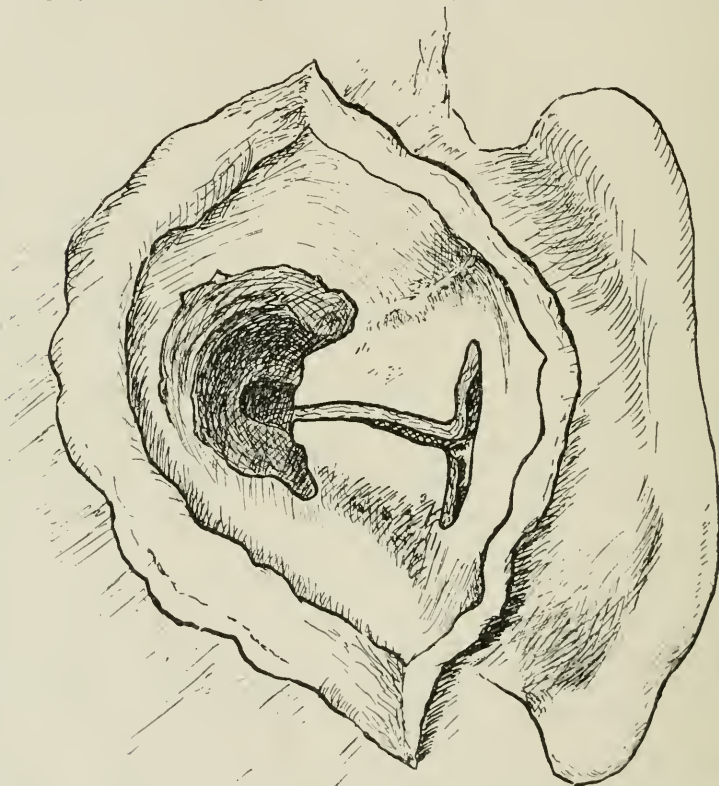


Figure 1. Radical operation finished and incisions made in the posterior canal for the plastic after the manner of Panse. Slightly altered from Politzer's 4th edit.

The operation being completed, the question of the plastic which is to follow and the care of the external wound become of importance. There are two principal varieties of plastic, each of which can be varied to suit the needs of the individual case. The first is that of Panse, in which the posterior membranous canal is divided medially, and then a cross cut made at right angles at the entrance of the external canal. (Fig. 1.) The two free corners

are then stitched to the upper and lower external angle of the original wound. (Fig. 2.) After trimming the flaps so that they will lie back nicely without superabundant tissue, the external wound is closed, with the exception of perhaps the lower point, where some gauze is inserted for a few days for drainage, while the

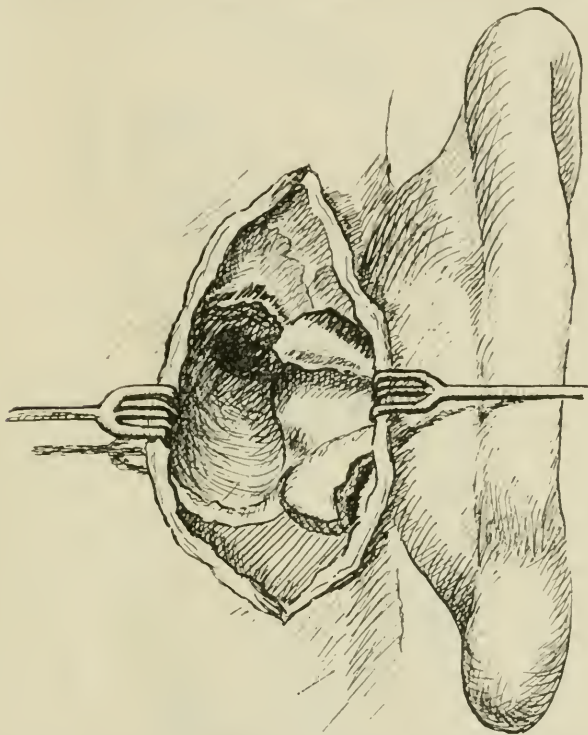


Figure 2. Edges of the flap stitched to the upper and lower angles of the external wound, and the whole ready for closing. Method of Panse. Slightly altered from Politzer's 4th edition.

external canal is lightly packed with gauze. This plastic has the advantage that it gives access to the entire area operated upon. Subsequently, new epidermis grows from the two edges and covers over the area of bare bone. Should there be any further trouble, ready access to the diseased part is obtained through the external canal.

The other form of flap is that known as Koerner's, in which a tongue is made out of the posterior wall of the external canal by means of incisions as follows: The external ear is laid forwards, and the concha pierced from the highest point of the posterior margin of the entrance of the external canal to the point of bony

attachment of the auricle, and continued the whole length of the posterior membranous canal. A second incision parallel to the first is then made from the lowest point of the posterior margin of the external canal, and continued as before. (Fig. 3.) This

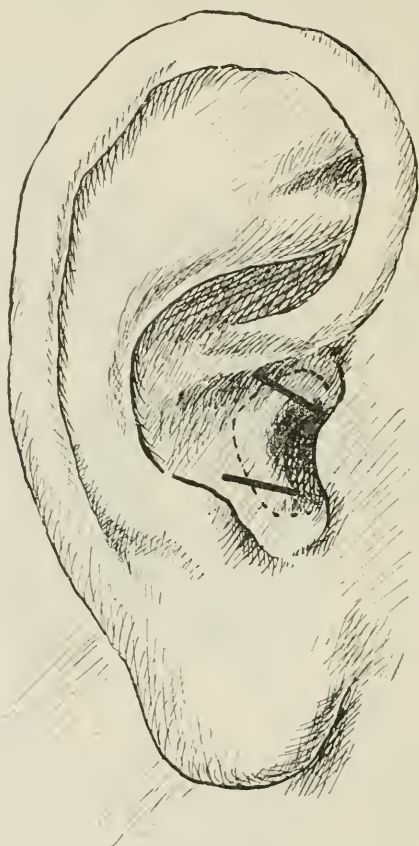


Figure 3. Incisions in the concha as made for the plastic after the manner of Koerner. Slightly altered from Politzer's 4th edition.

forms a tongue-like flap from eight to ten or twelve millimeters wide, and from twenty to thirty millimeters long. (Fig. 4.) Both of the incisions should be carried sufficiently into the concha so that the enlarged entrance to the canal will easily admit the forefinger (and this applies also to the plastic of Panse), because if the entrance through the external canal is not made very large the final cicatricial contraction is such that sufficient room will not be allowed. I speak of this especially because in one instance I failed to make the cuts into the concha deep enough to afford a suffi-

cient amount of room for the after-treatment. This opening may be made just as large as one desires; since the antitragus effectually covers any slight deformity in the ear due to an enlarged opening. The tongue flap being formed, and any superfluous tissue trimmed away, the flap is laid back against the bare bone, and the external canal packed with gauze sufficiently firmly to hold the flap in position. The external wound is then completely closed by sutures.

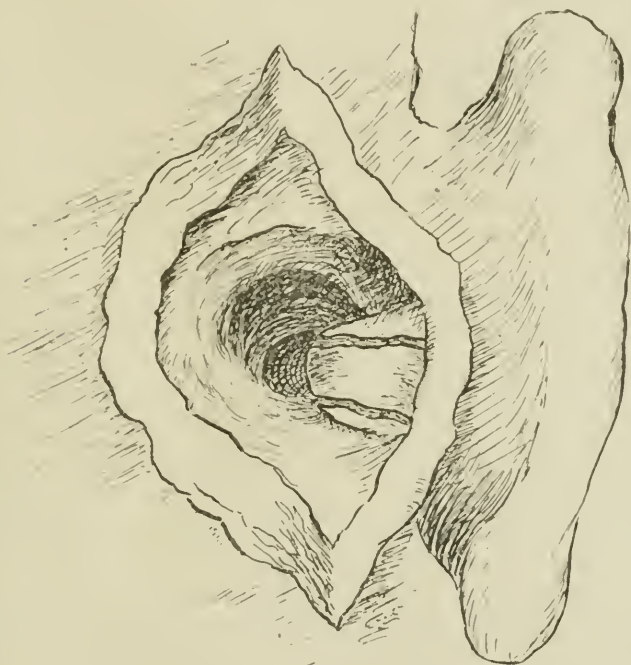


Figure 1. Operation completed, and incisions made in the posterior canal after the method of Koerner, showing the formation of tongue flap. Wound ready for closing. Slightly altered from Politzer's 4th edition.

The first dressing is made in from three to five days, although Koerner himself leaves his eight days. I have not been able to see any special advantage in leaving the first dressing in any longer than is necessary to allow the flap to become securely fastened. By the time the first dressing is made the flap is firmly attached to the denuded bone; and there are four surfaces which permit of epidermization. This allows of more rapid healing than does the flap of Panse. This flap should be used only in cases in which one is absolutely certain that the bone against which the flap is placed is entirely sound; otherwise some point of diseased bone may be

inclosed behind the flap, and subsequently break down. In Panse's flap, the bone being covered on its edges only, a better chance is afforded for any subsequent casting off of portions of diseased bone that may have been left behind; hence, in any case of long-standing chronic mastoiditis for which a radical bone operation is done, or one in which we have found more extensive involvement than we had expected, and fear that some diseased bone may be left behind, the flap of Panse is to be recommended.

The after-treatment for either method is comparatively simple. My own cases have remained in the hospital from twelve days to two weeks, although they might have gone out earlier, and several have been back at work in about three weeks from the time of operation. There have been no troublesome symptoms; and the results have been entirely satisfactory, all of the patients operated upon, several in number, saying that they felt decidedly better in every way.

In regard to the results in the way of hearing, a brief analysis of some points in eight of my cases may be of interest. Six of them were private patients who complained solely of long-standing suppurative otorrhea, there being no pain or other symptoms. Two of them I had endeavored to cure over varying periods during the previous seven years without result. Two had had a foul discharge since childhood, one of them being accompanied by the formation of granular polypi. One had slight cholesteatomatous discharge. Another had a foul cholesteatomatous discharge with extreme dizziness when the ear was syringed. All were in young people who were tired of the continual aural discharge. All dreaded an operation, but were willing to undergo one if it offered a hope of cessation of the discharge. These cases, with one exception to be noted, were finally cured over periods ranging from five or six weeks to something like three months, and without any external scar other than the line of the original incision. The hearing power has either remained the same or been improved in every case. In one case, ability to hear the whispered voice was raised from one foot to six feet; spoken voice from eight feet to thirty, and watch from three-quarters of an inch to about twelve inches. Another patient reports her hearing power improved, while she feels better than for years.

The eighth case was that of a boy who had suffered from a chronic discharge from each ear for several years, with diffuse mastoiditis on the left side. On this side I had operated on three

different occasions after the typical Schwartze method, removing all of the mastoid bone until but little of it remained, but still after each operation the purulent discharge from the ear continued, until finally I did the radical operation of removing the entire posterior bony canal, when the discharge ceased entirely after several weeks of after-treatment. At the same time I performed the radical operation on the other ear, which had been suppurating for several years, and in which curettage at the time of the previous operations on the left ear had failed of result. The after-treatment in the right ear has been somewhat tedious, and as there is still a slight discharge, it may be necessary to curette a portion of the bone through the canal before complete healing will take place. The general conditions in this case are not all that could be desired. This was a case in which the plastic after the manner of Panse was indicated, and in which Koerner's plastic was contraindicated; since, owing to the softened condition of the bone, it was absolutely impossible to be sure that all the disease had been removed.

In another case of acute mastoiditis supervening on an old otorrhea, after cutting away all of the posterior bony canal and completely cleaning out the antrum, the bone being very hard everywhere, a plastic after the Koerner method was made, with immediate fastening down of the flap and rapid healing.

Although the after-treatment of these cases may be expected to last anywhere from six weeks to six months, it is very simple, consisting in the removal of such granulations as may form and the insertion of sterile gauze tampons to take care of whatever secretion there may be. It does not interfere with the person's work, and when done at the physician's office requires but a few moments.

That no recurrence of trouble will ever take place no one can surely state, since a part once diseased is liable to subsequent trouble.

Jakins has reported in the *Lancet* of July 10th, 1900, 80 successive cases of radical operation done for the most part because of positive signs, such as pain, vertigo, recurrent polypi, mastoid swelling, cholesteatoma and necrosed bone in which the finding justified the operation. There were several cases with complications, such as septic phlebitis of the lateral sinus and jugular vein, extradural abscess, cerebral and cerebellar abscess. The results were uniformly successful, with the exception of three patients whose condition was beyond hope on admission. All of these seem to

have been cases in which there could be no question concerning the advisability of operation, rather than cases in which operation was done to prevent possible dangerous sequelae.

C. R. Holmes has reported a number of cases done absolutely for chronic discharge, in which the results were very satisfactory.

In spite of the fact that many otologists still believe in the palliative treatment of chronic suppurative otitis, and although Koerner states that he saw brain symptoms occur only twice in 2,207 patients, and that he does not fear the threatening symptoms to such a degree as to acknowledge the Stacke radical operation to be a prophylactic measure, and notwithstanding the fact that cases in which the indications for the radical operation as stated by Stacke are sometimes cured without operation—I nevertheless believe—in view of my own experience both abroad and at home, and in view of the many reported cases of serious brain and sinus trouble that are constantly being brought to our attention in otological and general medical literature—that it is our duty, in all cases of suppurative otitis media that are not cured after a reasonable length of time, to urge upon the patient the need of more radical surgery for the removal of the entire diseased area, and the production so far as possible of a positive cure.

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CONSTITUTIONAL MANIFESTATIONS DUE TO INFECTIOUS PROCESSES OF THE ADENOID STRUCTURE IN CHILDREN.*

BY D. BRADEN KYLE, M.D., PHILADELPHIA.

Usually the pharyngeal tonsil attracts the general practitioner or specialist's attention only when it is the site of some pathological process or from its physiological growth it becomes sufficiently large to obstruct nasal respiration and interfere with the development of the nasal and facial bones. To be sure, in the majority of instances any alteration in the gland is such as to demand surgical interference, but it has been my experience that we have certain constitutional symptoms brought about by alteration in this peculiar gland structure which should be classed as non-surgical and could be called medical adenoids. In order to clearly define these cases let us divide the subject into (1) Constitutional manifestations associated with enlargement of the adenoid structure even to such an extent as to demand surgical interference, and (2) Where the adenoid structure is very slight and in no way interfering with nasal respiration. When the latter condition exists there are no local symptoms to attract attention to this structure and it is liable to be overlooked by the clinician as a causal factor in disease. When the adenoid structure is enlarged there are usually sufficient local symptoms to attract attention to this structure.

The systemic phenomena associated with infection through this adenoid structure is practically the same whether the adenoid structure be of an obstructing nature or whether it is non-obstructive and the two can be considered together. But it is to the former that I wish especially to call attention. The physiology of this peculiar Luschka's or pharyngeal tonsil is still not well known. It is a conglomerate, racemose or rather mixed gland with a function—still yet in doubt. Of the many peculiarities of this gland structure, probably the most marked are its tendency to fluid infiltration, filling up very much the same as would a large lymphatic space; its being affected by vascular changes very rapidly, and the tendency to enlargement when the patient is suffering from any sys-

*Read before the American Laryngological, Rhinological and Otological Society, Washington, D. C., June 2d, 1902.

temic disease. Also when the patient, usually a child, is in the recumbent position and the circulation slowed, the stricture becomes more edematous and interferes with respiration causing night mouth-breathing. There is also a peculiar relation to the mentality of the child suffering from enlargement of this gland. Drs. Harrison Allen and J. Solis Cohen were the first, I believe, to call attention to the intimate relation of this gland structure to the brain and its meninges. However, that may be explained, one thing is certain that this peculiar gland structure is particularly susceptible to inflammatory actions and that the slightest inflammatory change in this structure will produce in children, although the same is practically true in adults, marked rise in temperature with all the associated febrile phenomena. This is particularly true in children, and I am led to believe, from my own observations and from statements made to me by general practitioners, that frequently we have to deal with febrile conditions in children in which there is no apparent cause for the symptoms present and that the cause of such temperature, with the accompanying systemic phenomena, could be traced directly to the inflammatory condition of this adenoid structure. I have noticed that in any case in which there is the slightest infection, with inflammatory condition of the adenoid structure, the systemic phenomena are all out of proportion to the local cause; that the gland seems to rapidly absorb any toxic material and that the temperature suddenly rises before there is any very marked constitutional effect. Children with this adenoid structure are more susceptible to cold and disease of childhood than those who do not have it and the symptoms produced by the cold are aggravated in proportion to the amount of gland structure present. In all the infectious processes of childhood it is a well known clinical fact that the prognosis is more grave and that the symptoms common to that particular infection are more aggravated and of a more severe type than in cases in which this gland structure is absent or very slight. I have made this observation in a number of cases of scarlet fever and diphtheria, and in each instance it has proven correct. This, however, is a fairly well established fact and it is particularly to what might be called the more minor infections of this gland to which I particularly wish to call attention. Owing to the peculiar character of this gland I believe that its surface furnishes a very suitable nidus for the lodgment of infectious material and while the nasal and pharyngeal mucous membrane might be in a fairly normal condition, it is quite

possible to have slight inflammation due to a local infection involving and largely limited to, the pharyngeal tonsil. The products of such infection and inflammation are rapidly absorbed into the system and the febrile phenomena following are misleading, and usually there is nothing locally in the throat to call attention to that point. To be sure, inflammatory change may be brought about in this gland structure, which change is secondary to some systemic condition, even the infection may be secondary to some systemic condition, but I do believe there are cases in which the condition described above actually takes place, and they are the cases which are often put down as of a febrile condition due to some remote cause. It is now my regular practice to examine the nasopharynx when there is any question as to the cause of the rise in temperature, making it a rule and part of the routine examination. One of the best proofs that absorption of infectious material through this inflamed gland is the cause, either direct or associated, of the febrile condition so often seen in children, is the fact that when remedial agents are applied for the relief of this inflammation, and the prevention of infection or the removal of the gland structure even though it be non-obstructive, the tendency on the part of the child to rapid and recurring febrile attacks is relieved. That leads us to the belief that in some cases in which there is present only a small amount of pharyngeal tonsil, not sufficient of the gland to cause any obstruction to breathing, that such cases, owing to the fact of its tendency to infection, become just as truly surgical cases as those in which there is marked obstruction. True they become surgical from an entirely different standpoint than the obstructive variety, but if absorption is taking place through this gland and if it is frequently the site of an infectious inflammation the gland structure should be removed, obstruction or no obstruction.

After the removal of the adenoid structure it has been my experience that I have very slight if any rise in temperature and after removal of the structure even should there be some slight infection there is not the rapid systemic phenomena which are observed where the gland structure is still present. It would seem that the gland itself seems to be capable of taking up rapidly materials which come in contact with the surface or materials which are manufactured within the gland structure owing to inflammatory or pathological processes.

In this paper I especially want to call attention to the adenoid structure in quite young children. Frequently we have febrile attacks in children in which the physician is called in and he finds

the little patient with irregular temperature, restless, probably some symptoms of cold, but no well defined condition. The breath is heavy, there may or may not be nasal discharge, temperature ranging from 100° to 102° or 103° . This temperature seems to go higher when the child is kept in bed. The cervical and submaxillary glands are enlarged. There may be some slight throat cough, in fact the symptoms are so general that frequently the physician is led to believe that some serious disease is developing and he probably suspects typhoid fever or beginning pneumonia. There is often associated as a symptom the chilly sensation, probably not amounting to a complete chill, but which may also lead the physician to suspect malarial infection. The case is then watched for developments and treated in a general way, giving purgatives and diuretics. The febrile condition will last probably from two to four or five days, coming on rather suddenly and gradually disappearing. When recovery has taken place the cause is usually assigned to some gastric or intestinal disorder and the child goes on to complete recovery.

My own experience has been that these attacks occur in children at irregular intervals. I have seen cases in consultation in which there has been repeated attacks. My object in writing this paper was to call attention to this particular class of cases and my observations lead me to believe that the adenoid structure, although only present in a small amount is responsible in a great many cases for the symptoms described above, which frequently occur in children. If the nasopharynx is examined either by inspection through the nose or rhinoscopic or digital examination, this gland structure will show decided inflammatory change. The symptoms of cold in the head which are misleading to the physician and which are out of proportion to the nasal discharge are due to the fact that the obstruction is caused by the inflammatory enlargement of the adenoid structure and while the anterior nares may be fairly free, the adenoid structure obstructs the post-nasal space, giving all the symptoms of cold in the head.

The treatment of these cases is very simple. During the attack all the secretions should be stimulated and the excretory glands aided in their function so as to increase elimination. Warm boric acid solution, eight grains to the ounce, sprayed into the nostril and used as a gargle with the administration of small doses of calomel and soda, followed by a saline is usually all that is necessary. I believe that after the recovery the adenoid structure should be scraped out, even although there is not present any symptoms of nasal obstruction or tendency to mouth breathing, for in that individual the structure must be particularly susceptible to infection and I also believe that with the removal of this structure it would lessen the susceptibility of the child to certain of the infectious diseases of childhood.

1517 Walnut Street.

THE BEST MEANS OF REMOVING NASAL OBSTRUCTIONS, WITH REPORT OF 264 CASES.*

BY J. W. MURPHY, A.M., M.D., CINCINNATI, O.

Laryngologist and Aurist to the Cincinnati Hospital.

The subject to which I wish to direct your attention for a few moments will be simply the method which I have employed for the past few years in the reduction of nasal obstruction. I do not propose to enter into the symptomatology or pathology of this condition, but simply to bring before you my method of treating this class of cases. I do not claim for this method that it is better than some others, but simply as practiced at present it has given me better and more permanent results than any other method with which I am familiar.

The numerous methods that have been proposed from time to time for dealing with hypertrophied conditions in the nasal cavities is our best proof that no one method has proven entirely satisfactory. Each has adopted the method at which experience has proven him most adept, and hence of the many different procedures advanced, all have had their advocates.

The inter-dependence of local symptoms and general effects resulting from improper nasal respiration upon the health, development, and general well-being of the individual is being more fully recognized, even by the laity.

When a patient complains of a continuous or intermittent inability to breathe satisfactorily through the nose, in the great majority of cases the difficulty arises from an enlargement of the tissues constituting or covering either the middle or the inferior turbinated bodies. Not infrequently the obstruction arises from some other cause, as a deflected septum, or a spur, or nasal polypi, but it is chiefly the obstruction caused by hypertrophy of the turbinates, and their surgical treatment that I wish to direct your attention.

It is now generally accepted that the inspired air secures its necessary warmth and moisture by passing over the mucous mem-

*Read at the Seventh Annual Meeting of the Western Ophthalmologic and Oto-Laryngologic Association, Chicago, April 10, 11 and 12, 1902.

brane lining the upper portion of the nose, and that the expired air passes out along the inferior meatus. When these passages are obstructed it is useless to formulate any set rules as to how they should be treated, but each case must be studied separately, and

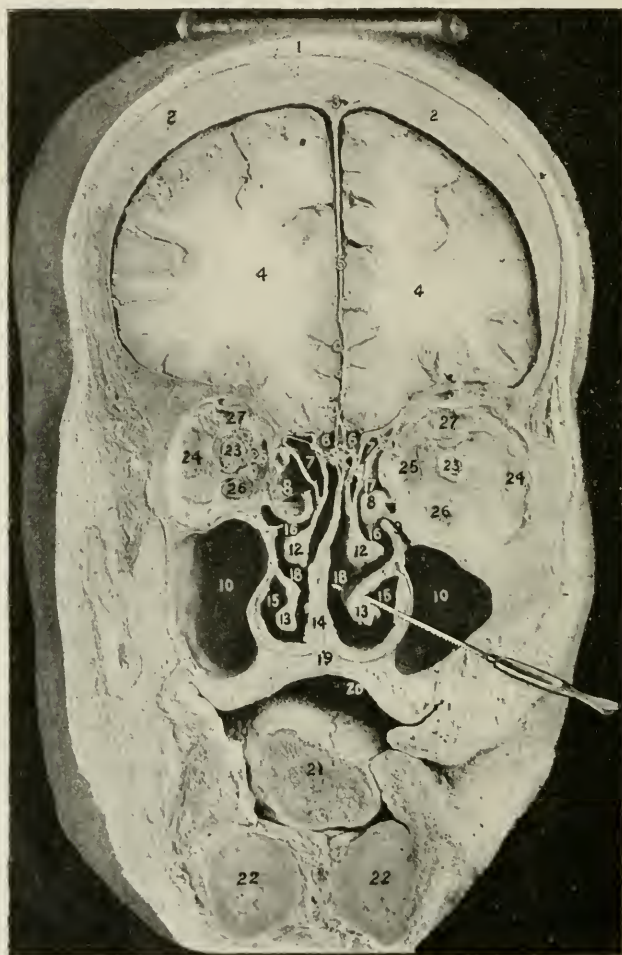


Fig. 1. Showing the proper position of the author's narrow saw so that only the lower edge of the turbinate bone will be included in the operation.

treated by that method which has been most successful in your hands.

The object of most nasal surgery is to increase the sum total of nasally inspired air, with as little destruction or injury as possible of the over-lying mucous membrane.

For a number of years the use of the galvano-cautery seemed best adapted for this purpose, but it has many objectionable features, and I now find myself resorting to the cautery less and less, each year, since more satisfactory and more permanent results can be secured by other means. My experience has been that more damage results to the mucous membrane from repeated cauterizing than results from a clean surgical operation along the under surface of the bone, where the glands are few and the hypertrophied tissue is most marked. This is especially true with the inferior turbinate, and it is next to impossible to properly cauterize the posterior end of this body, where the hypertrophy is most marked. The reaction resulting from the cautery and the danger of synechia following, together with the fact that these patients are prone to return in a year or two complaining of the same symptoms, have caused me to largely abandon the cautery treatment.

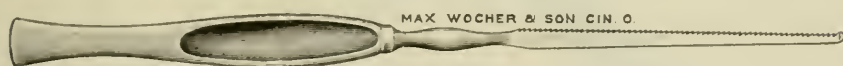


Figure 2. Author's saw with straight set teeth.

The method of sub-mucous puncture, advocated before this society at its last meeting by Dr. M. A. Goldstein, I have tried in a number of cases during the past year. It seems well adapted to the beginning stage of hypertrophy, but sufficient time has not yet elapsed to judge of the permanency of the scar thus formed.

One objection I found to Dr. Goldstein's canula was that the opening was too small to allow the passage of a chromic acid bead of sufficient size to accomplish the desired results.

Applying the same principles to intra-nasal surgery that we apply to surgery of any other portion of the body, seems reasonable. A thoroughly aseptic operation within the nose is not possible, but the parts should be rendered as aseptic as douching with a warm saline solution can make them, since much of the success of the operation will depend upon this principle. With clean nasal surgery there is less destruction of the mucous membrane, since only the pendulous portion is removed, and for this purpose the saw and scissors have given me my best results.

It is of the utmost importance that these two instruments be of the right size and form. Most of the nasal saws on the market are too broad in the blade, and it is impossible to turn them after insertion, so as to cut at almost a right angle with the septum. The saw must have a firm handle, but very narrow, flexible blade.

The saw I have had constructed by Max Woehner & Sons (Fig. 2) has the blade 5 inches long and $\frac{1}{8}$ inch wide, with straight set teeth, so as to cut on the forward and backward stroke. I make it a rule to have the saw sharpened after each operation, as there is as much difference between a sharp and a dull saw, as there is between a sharp and a dull razor.

Beckman's straight nasal scissors have proven very satisfactory for this operation, as they will cut out at the very tip, where most nasal scissors fail to cut.

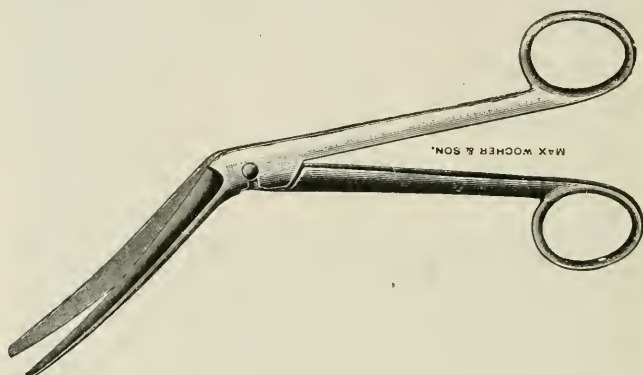


Figure 3. Beckman's Nasal Scissors.

In order to avoid the tendency to spring apart at the tip, when cutting a hard substance, as the posterior edge of the turbinate bone, I have had constructed a pair of scissors in which only the anterior half of the two blades are cutting surface, since this is the only portion of the cutting surface which can be used in the nasal cavity. By this construction we get a strong and at the same time narrow blade.

With properly constructed instruments which are kept in first class order, the operation is quickly and easily done. I know there are many objections to this method of reducing nasal obstructions, but I feel that much of the objection arises from a misapprehension of the operation, or an attempt to do the operation with improper instruments, or a failure to select suitable cases.

It is not a removal of the turbinate bone, as the name turbinectomy would imply, but is rather a turbinotomy, in which only a small portion of the under edge of the bone is removed. I have never yet removed a turbinate body, unless it were the middle, for some definite purpose, as drainage, or to gain access to some of the accessory cavities.

The operation which I have practiced for several years, consists in a removal of the redundant tissue. That the scar resulting from this may be lasting, I always aim to remove a very small portion of the under edge of the bone. (See Fig. 1.) Often this sliver of bone is so small that it is scarcely perceptible, but the success of the operation consists in getting a linear scar, along the entire under edge of the turbinate body, since it is by means of this scar that the permanency of our opening is to be maintained, and the blood supply cut off, from the overlying connective tissue. During the past ten years I have had occasion to do this operation 264 times on 155 patients, and in about 2 per cent of my cases there

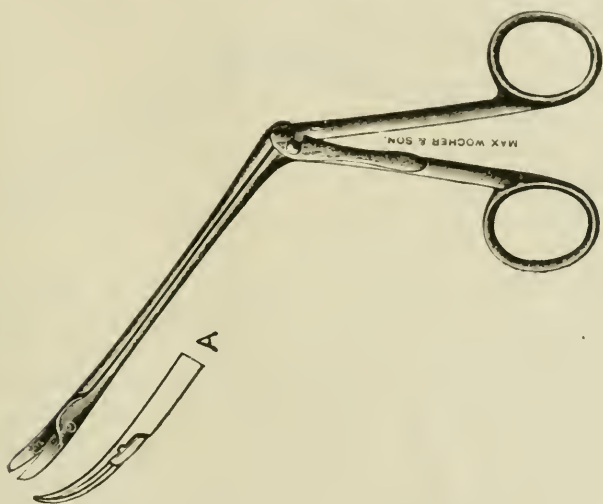


Figure 5. Holmes' Middle Turbinate Scissors.

has been a regeneration of tissue at the site of operation. Why it occurs in some cases, and not in others, I have never been able to discover. I have never yet operated the second time, but a few patients will need the secondary operation in order to secure the desired results. All of these cases where a secondary operation is indicated occurred during my early experience with this operation, and at that time I was hearing so much about hemorrhage and pharyngitis sicca following this operation, that I was inclined to be most too conservative in the amount of tissue removed. I am satisfied after considerable experience that both of these dangers are insignificant. I have never seen a case of pharyngitis sicca resulting from this operation either in my own practice or that of another. The secret of the whole operation consists in the removal of a

small sliver of bone, along with the redundant tissue. For this purpose the saw is far superior to the scissors, since there is no crushing of the bone, and the resulting scar is more permanent.

For the removal of the middle turbinate I find the scissors devised by Dr. C. R. Holmes (Fig. 5) admirably adapted for this purpose, and they have simplified operations in this region of the nose very much.

The advantages of operating with the saw and scissors, are that the technique is simple, the instruments required are few, and inexpensive, and no cauterizing outfit is necessary. Then, too, the parts operated upon are constantly under the eye and direct control of the surgeon, and as much or as little tissue as is necessary can be removed. The operation requires but a few moments, is painless, and bloodless, and as a rule the results are permanent.

I have operated upon a number of medical men, who should be competent to judge as to results, and they have all experienced permanent relief. Indeed the operation has been so satisfactory both to myself and patients that it is seldom I now resort to any other method.

I shall only take a moment of your time to demonstrate a few steps of the technique; as much depends upon this.

After douching the nose with a warm normal salt solution, pledgets of cotton dipped in a 5 per cent solution of cocaine are carefully packed around the turbinated body. The first pledget is carried up under the scroll-like edge of the turbinate, (Fig. 1) as here is where the first incision is to be made. From six to eight pledgets of cotton are packed in. One of these pledgets I dip in a 1 to 3,000 adrenaline solution to control the hemorrhage. These are left in for ten minutes when they are removed, and the parts inspected again to decide how much tissue to remove. A fine, straight saw is passed along the floor of the nose, and brought up under the scroll-like edge of the turbinate. It is passed back till its blunt end infringes upon the posterior wall of the pharynx. It is now withdrawn about three-fourths of an inch, which gives you the length of your stroke, and is then turned so as to cut almost at a right angle with the septum. Half a dozen strokes with the saw and a thin sliver of bone is removed from the under surface of the turbinate. The author's nasal scissors (Fig. 4) are now passed in, the lower blade following the saw cut, and the hypertrophied membranous portion is removed. Frequently upon inspection we find a small portion of the posterior end of the turbin-

ate has escaped both the saw and scissors. Under direct illumination a wire snare can be made to engage this portion and it is removed. It is very important to get this posterior end of the body, else it will swell again and our operation will not be complete. The nose is douched again, and a light gauze packing which has been dipped in a 1 to 3,000 adrenalin solution is applied. The patient is instructed to go home and keep quiet, preferably in bed. On the following morning packing is removed, the slight hemorrhage which follows soon ceases, and the operation is over. The

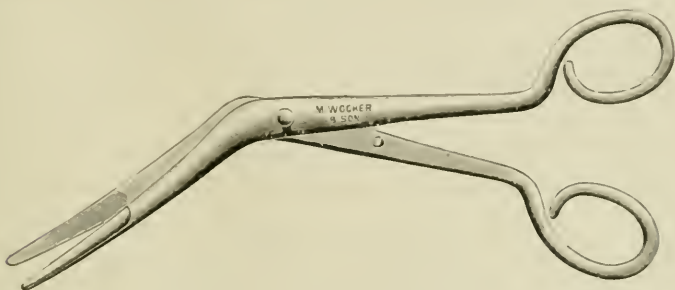


Figure 4. Author's Nasal Scissors

nose is washed out twice a day by the patient at home with a warm alkaline solution, and healing is complete in a week or ten days.

Recently I have been leaving the packing out, and simply dusting the parts with the powdered supra-renal gland. The patient is given a powder blower, with a small portion of this powder, and instructed to insufflate a little of the powder every two or three hours. So far it has worked very satisfactorily.

This operation has proven so satisfactory both to myself and patients, and the relief experienced is so marked, that I rarely find it necessary to resort to any other method.

Seventh and Race Streets.

A CASE OF EPITHELIOMA OF THE LARYNX. THYROTOMY. RECURRENCE AND DEATH IN FOUR MONTHS.*

BY CHARLES H. KNIGHT, M.D., NEW YORK.

A gentleman, 52 years old, was referred to me December 4, 1899, with the following history:

Since an attack of grip one year ago his voice has been hoarse and at present he is almost aphonic. He is constantly annoyed by a hacking cough. Sputa are scanty and contain no tubercle bacilli, and there are no signs of lung trouble. Family history is good. The habits and general health of the patient himself have always been excellent, except for occasional attacks of rheumatism, and several years ago an obstinate course of eczema affecting the face and chest. He has been subject to boils and all his life has been more or less disturbed by warts on his hands. The latter fact is of interest in connection with a "verrucous diathesis" upon which great stress was laid by one expert whom he consulted. About fifteen years ago he had some kind of ulcerating lesion on the distal phalanx of his right thumb, which refused to heal and finally the thumb was amputated. The character of this ulcer is not clear, but it is said not to have been malignant and there has been no recurrence. There is no history of syphilis. The patient is not an inordinate voice user and is a moderate smoker. He has more or less chronic catarrh of his nose and pharynx, but is not a mouth-breather. He looks old for his years, but is very active in business and is seldom indisposed.

With the laryngoscope the right vocal band is seen to be infiltrated by a mass which roughens its margin and interferes with its motility. It is livid in color, but there is no general hyperemia of the larynx. In fact the mucous membrane in the region of the arytenoids seems pale and flabby. There is a small superficial ulcer near the vocal process. The voice is husky and breathing is stridulous, especially on exertion. The breath has no fetor. There is no pain, but the larynx feels tired and there is a sense of constriction after use of the voice. There is marked follicular pharyngitis and the right nostril is partially occluded by a deflection of the

*Read at a meeting of the American Laryngological Association, May 25, 1902.

septum. No glandular enlargements can be detected and there is no pain nor sensitiveness over the region of the larynx. A small fragment removed with cutting forceps gave negative results on microscopic examination. A course of mixed treatment with increasing doses of potassium iodide made no impression and the conclusion was reached that the lesion was malignant. On being told of my suspicion the patient positively refused operation. He was therefore given a spray of suprarenal extract solution containing a grain of phenic acid in each ounce and inhalations of menthol in fluid alboline five grains to the ounce. He was directed to use his voice as little as possible and to stop tobacco and alcohol. About this time he confessed to me that four months before he had consulted one of my colleagues, who after several examinations, a tentative course of potassium iodide, and microscopic examination of a fragment removed with forceps, had pronounced the disease epithelioma. Of three sections examined at this period only one showed characteristic malignant changes. From this time the case progressed so favorably that there was a reasonable doubt of the opinions given. The voice was partially regained, the cough ceased, and the general condition improved until October, 1900, when he came to see me after a month in the woods, where he had caught a severe cold. He was aphonic, was coughing constantly and expectorating freely. The larynx was very angry and swollen the infiltration of the right side was much increased and the sputa were copious, tinged with blood and very fetid. To my surprise the patient began to improve after a week or ten days and slowly recovered ground in every particular, except as to his voice. In February, 1901, he consulted a leading specialist in a neighboring city, who expressed the opinion that the disease was benign, and that it should be removed through the mouth, or in the event of failure, by external operation. Encouraged by this opinion and being very anxious to recover his voice, he finally persuaded himself to submit to operative interference, although fully warned of the probable consequences of an endolaryngeal operation. Accordingly the latter part of May a portion of the growth was removed from the right vocal band with Mackenzie's forceps. The microscopic report follows: "The tumor began as an epithelial papilloma. The bulk of the growth still maintains the type of benign epithelial papilloma, which recurs locally after operation, but does not produce metastases. It is not possible to

say positively that the growth has passed the limits of simple papilloma and belongs to the class of malignant infiltrating epithelioma. In order to determine this point it would be necessary to have more of the underlying tissue." There was a great deal of inflammatory reaction after this operation, dyspnea became more and more distressing until on June 2, two weeks later, I was obliged to do a tracheotomy. A week after the trachea had been opened the larynx was split from below upwards, in the interval the patient having been very uncomfortable and at times in danger from clogging of the tube with viscid secretion. With the exception of the left ventricular band, all the soft parts were thoroughly curetted, especially the right vocal band and a considerable area of the lateral wall of the larynx immediately beneath it. In about a month signs of glandular involvement appeared and the wound over the thyroid, which had healed, began to break down. The conditions rapidly grew worse and death occurred four months after the laryngo-fissure and less than three years after the first laryngeal symptoms.

Contiguous pieces of tissue removed at the thyrotomy from different regions of the larynx were sent for examination to two microscopists and their independent reports are of interest.

Specimen No. 1, from right ventricle and band:

Report a—Superficial epithelial papilloma.

Report b—Carcinoma (epithelial type) in a high state of degeneration.

Specimen No. 2, subglottic neoplasm right side:

Report a—The great bulk of growth is a superficial epithelial papilloma—the epithelial growth has in a few islands invaded the connective tissue and taken on the characters of true epithelioma. These foci are of small extent and probably metastases have not yet occurred.

Report b—Carcinoma formation (epithelial type), but not so degenerated as Specimen No. 1.

The points of special importance in the foregoing case seem to be as follows:

1. The erratic clinical history. Instead of the usual progressive development of the disease, periods of marked remission and actual improvement were exhibited. While it is by no means unusual for cases of this kind to linger for years without much change, we rarely witness such decided improvement as in this instance twice occurred after the case had assumed a most threatening aspect.

2. Tardy invasion of the lymphatics, but speedy involvement after surgical interference with the neoplasm. It is a notorious fact that the structures of the larynx being included in a cartilaginous box through which no lymphatics pass a cancer strictly intrinsic is slow to infect the glands. But when this barrier is broken down at once the morbid germs begin their encroachment upon the lymph channels with the usual metastatic sequelae.

3. Contradictory microscopic testimony. Such results obtained with specimens removed as were these so as to include the whole thickness of the neoplasm would incline us to accept with hesitation reports based upon superficial fragments excised with laryngeal forceps. This experience should by no means discredit microscopic evidence at least when it is positive. It merely enforces the importance of repeated examinations when results are negative in the face of suspicious clinical signs. As to the latter the laryngoscopic picture gives us no single feature upon which we may rely for a diagnosis. The yellowish-white appearance described by Moritz Schmidt, the snow-white surface referred to by others, the sharp-pointed grass-like lesion considered by Felix Semon "extremely suggestive of malignant disease," are by no means always present. In nearly every case we are compelled to reach a conclusion by a careful and prolonged study of all the symptoms subjective and objective. The importance of recognizing the disease at an early stage, when a modified laryngectomy or an endolaryngeal operation may fill the requirements, is beyond question. A cancer of the larynx so extensive as to demand complete removal of that organ with adjacent parts is not operable. The chances are that the disease has already crept along a lymph channel beyond detection where it will soon become a focus of recurrence. The situation being fairly presented, but few would consent to submit to the mutilation involved in a complete laryngectomy, especially since immunity cannot be thereby ensured. In deciding upon the proper course to pursue in a given case the age, temperament, environment and general condition of the patient are considerations hardly secondary to the extent and duration of the lesion itself. Provided the latter can be identified early enough and in cases strictly intrinsic it seems to be clearly proved that a laryngofissure without extensive sacrifice of tissue is capable of eradicating the disease and protecting against recurrence.

A NOVEL FEATURE IN THE TREATMENT OF TUBERCULAR LARYNGITIS, WITH RECITAL OF A PRESUMABLY CURED CASE.*

BY F. L. STILLMAN, M.D., COLUMBUS, OHIO.

"One swallow maketh not summer," neither does one case of alleviated tubercular laryngitis prove that the methods of treatment pursued in that individual case will be effective in all cases. Still, the refined technic which accomplishes the best results in both medical and surgical diseases is arrived at largely by a process of less efficient. In the case reported many favorable elements combined to make the outcome more than usually satisfactory, but the writer thinks that the reflected sunlight treatment, the idea of which is original so far as he has been able to discover, had its fair share in the more or less favorable outcome of the disease.

The treatment by this method will probably not be found as practicable in private practice as in sanatorium treatment. In the latter case trained assistance can be utilized for carrying out methods of treatment the minute details of which are essential to success. In the patient's home, as a rule, the things accomplished are measured by the energy of the patient himself, who has the least potentiality of any of the inmates of his household.

In the title of the paper it is called a "presumably" cured case. The patient seems well, does her own housework much of the time, has a zest for life, and it is hoped that there will be no relapse; but sufficient time has not elapsed to call the case positively cured.

The patient first came to my office November 19, 1900. She was 5 feet in height and weighed 92½ pounds, and was in pretty bad shape. Examination—Lungs: The apices showed a moderate amount of consolidation, and in an area as large as a silver dollar high-pitched expiration and a friction rub and pain subjectively, were found. This area was just to the right of the sternum and at fifth interspace. There was an afternoon elevation of temperature of about 1½ to 2 degrees. A microscopical examination of the sputum gave a report of the presence of tubercle

*Presented at the Eighth Annual Meeting of the American Laryngological, Rhinological and Otological Society, Washington, D. C., June 2, 1902.

bacilli—few in number, however. Larynx (See Fig. 1): The vocal cords, in so far as visible, were thickened and ulcerated; arytenoids and aryepiglottic folds swollen. The epiglottis was very much infiltrated, and the left upper edge had been eroded until the epiglottis at that point was only one-half its original height. The very much swollen tissues at this point presented the "mouse-nibbled" appearance often described, mingled with a grayish slough. At intervals on the ulcerated surface appeared four or five acuminate, bright red granulations. She was entirely aphonic. The pain was not quite so severe as is usual in these cases, and throughout the illness it was only during occasional short periods that cocaine was needed for its analgesic effect. It is to be noted that in this case it was always found more satisfactory than orthoform.

The patient is married and has two small children. She has always enjoyed good health. Three years before her first visit to me she was treated by her family physician for pharyngitis. She says that at that time there was a small superficial ulcer on the left side of pharynx. This responded to treatment, but the character of it can now only be surmised. As local treatment was strongly required, and as the financial condition of the family would not allow it, I did not advise change of climate. The condition of the larynx made the prognosis very bad under any circumstances, and finding that I could get the patient's complete co-operation in any line of treatment proposed, I determined to attempt to carry out a line of hygienic treatment that had always appealed to me theoretically. Cold weather was coming on, but she agreed to live in the sunlight and open air as much as possible. She was too weak to take long walks, so she sat in a wagon in the back yard, bundling herself up in warm robes. In order to obtain the most effective bactericidal and vitalizing action of sunlight I taught her to reflect it directly into the larynx. The neighbors were often seen tapping their heads significantly when they beheld the frail, but determined little woman with two mirrors in her hands, and her mouth widely agape, following the course of the orb of day like a winter sunflower; but she was well repaid when she began to increase in weight and the pain and dysphagia began to diminish.

Finally, her strength was such that she could take long walks, and then her strength increased more rapidly. She began to have some voice in July, 1901. This gradually improved for a couple of months until it had fairly good quality—at which point it has remained. The weight gradually but with some fluctuations in-

creased, until it now remains about 105. At present the larynx seems normal; she has, however, several times had some superficial ulcers develop on the back wall of pharynx or on one of the arytenoids. This has always responded readily to curetting and rubbing in of pure lactic acid. The condition of the lungs has likewise improved and they are causing no pathologic symptoms.

Internally she has had cod-liver oil and creosote and malt, and locally besides the use of frequent, at some periods almost daily, application of lactic acid, it has a number of times been found necessary to use cocaine, orthoform and an inhalation of menthol in albolene. Surgical treatment (curette, forceps, snare, Krause's ring and double curette, etc.) have been employed several times to remove tubercular hypertrophies and areas of ulceration.

In order to make the report complete clinically, it should be stated that the progress of the case has been complicated twice by pregnancy. The first time was in May, 1901. The histories of her other pregnancies had been a tale of vomiting with great debility and emaciation in the early months. This time the unfavorable symptoms began at once, and the larynx began to get worse appreciably. Thinking that the case would undoubtedly prove fatal if the pregnancy was allowed to continue, I asked two physicians (one of whom was the physician by whom she had been referred to me), in consultation, and the unanimous opinion of the consultants was that the pregnancy should be terminated. This was done with quite satisfactory results. In the fall of 1901 (November) she became pregnant again, and after waiting longer than before, her general condition became so precarious that after another consultation it was decided to again terminate the pregnancy. Since that time she has had no relapse.

The drawings which accompany this will show by the dates, the rapidity of the progress. There has been no relapse since the last one dated, October 23, 1901, was drawn. Fig. 1 has been described above. In Fig. 2 the infiltrated tissues of the epiglottis are seen to have broken down into well-marked tubercular ulceration. In Fig. 3 it can be seen that cicatrization is taking place, which was so well advanced when Fig. 4 was drawn that only one ulcerated spot could be seen. Two tubercular hypertrophies were still present, one on the free edge of the right vocal cord, and one in the inter-arytenoid region. These developed still more until they presented the appearance seen in Fig. 5. Soon after that they

were removed. They had kept up the aphonia, and in a reasonable



Fig. III
Jan. 22, 1901

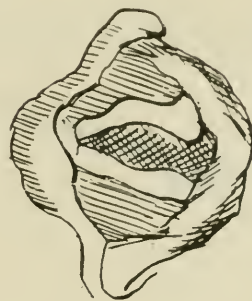


Fig. VI
Oct. 23, 1901.



Fig. II
Dec. 10, 1900.

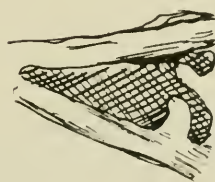


Fig. V
April 10, 1901.

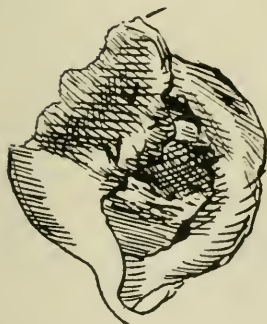


Fig. I
Nov. 19, 1900.

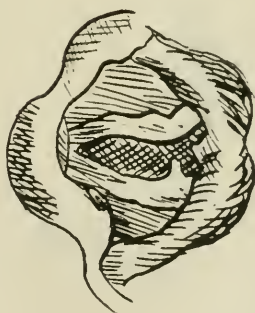


Fig. IV.
March 29, 1901

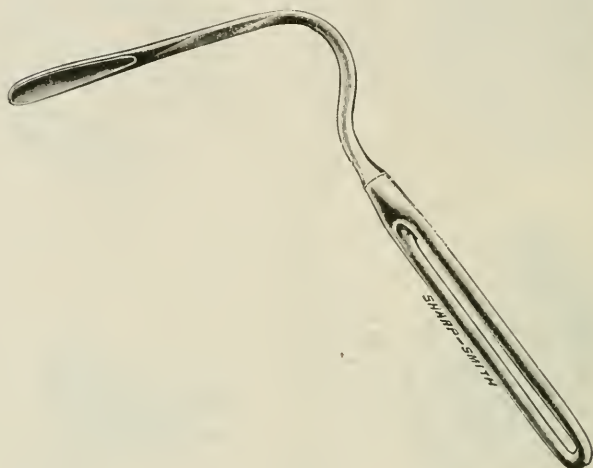
length of time after the healing of the wounds of operation the voice began gradually to return.

118 East Broad Street, May 14, 1902.

A NEW FOLDING TONGUE DEPRESSOR.

BY HENRY W. WANDLESS, M.D., NEW YORK.

In the "New York Medical Journal" of May 22, 1897, I described a new tongue depressor represented here in Plate 1. Since



then I have used it exclusively and with entire satisfaction. To make it more convenient for carrying around, I have had it jointed by a hinge (Plate 2), which allows it to fold compactly and is of



convenient size for the watch pocket. The joint is made so that the two parts are easily separated and is aseptic. Made by George Tiemann & Co., New York.

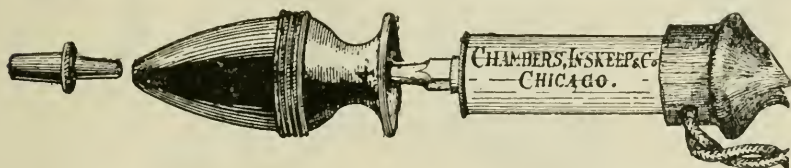
45 West Thirty-Second Street.

ON THE USE OF HOT AIR IN EUSTACHIAN CATHETERIZATION.

BY J. F. OAKS, PH.G., M.D., CHICAGO.

Professor Ophthalmology and Otology, Chicago Eye, Ear, Nose and Throat College and Harvey Medical College.

Although comparatively new, the use of heated air in the treatment of otitis media has become a recognized and well-known method among ear specialists. My attention was directed to the use of hot air in the treatment of middle ear deafness by the publications of Dr. Charles Enslee, a few years ago. I opine that the lack of interest in the use of hot air by the Enslee method, the merit and usefulness of which was generally admitted, has been due to the cumbersome feature of the apparatus and expense of the outfit. For the past two months I have been experimenting with an unique apparatus, the invention of Dr. W. K. Seelye of Dubuque, Iowa. This apparatus, which I will call the "Seelye heater," consists essentially of a brass tube around which is closely



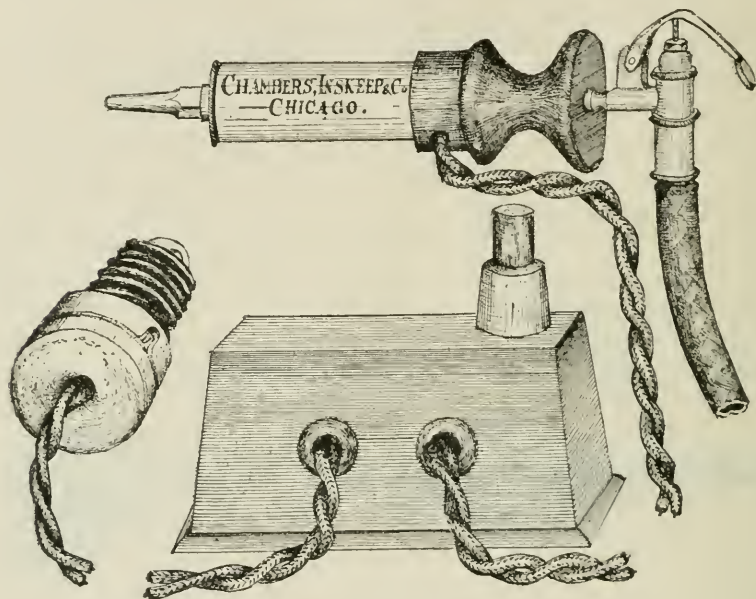
woven a coil of wire of high resistance. Outside of this coil is a packing of abestos, all of which is encased in a nickel-plated brass tube three-fourths of an inch in diameter and about two inches in length. The distal end is in the form of a metal tip of the size and form of the ordinary "cut-off" tip. The proximal end is made of black fiber so shaped as to be held easily with two fingers while the thumb rests against the cut-off, making the whole length of this very handy apparatus about $3\frac{1}{2}$ inches.

The wire used is of a kind which offers high resistance, generating heat, causing the inner brass tube to become sufficiently hot to heat the compressed air in its passage through it. All the metal parts are of brass and all joints are either spun together or screwed, there being no soldering.

The conducting cords are attached by a screw plug to the lamp

socket. In the cord is introduced a single point button switch which is placed on the table within easy reach of the operator.

To operate the "Heater" close the circuit by pressing button of switch for four or five seconds. The Heater will then deliver air under ordinary pressure at the desired degree of heat for catheterization of the Eustachian tube, and will retain the heat long enough to complete the treatment of one patient.



If greater heat is desired as in Politzerizing with Pyncheon's inflator, the current may be allowed to pass through the Heater eight to ten seconds. In no case should the switch be left closed more than ten seconds, as the heat would become so great as to injure the apparatus. As a safeguard, the current should be turned off at the lamp socket when through with the apparatus for the day.

The "Seelye Heater" as illustrated in the cut is beautifully and substantially constructed by Chambers, Inskeep & Co. of this city. It is light and easily manipulated, weighing but two ounces.

In the beginning of our experimentation with the "Heater" it was found that the silver catheter became uncomfortably hot at the proximal end, not only to the patient but also to the operator. This was in great measure remedied by the fitting of a fiber tip to

the proximal end of the silver catheter which formed a non-metallic connection between catheter and heater, which lessened to a great degree the heating of the catheter.

The use of the H. R. catheter suggested itself on account of its being a poorer conductor of heat, but its too great flexibility and liability to lose its distal curve by the heat employed, as well as the greater clumsiness of the instrument has discredited its use in my hands. Chambers, Inskip & Co. make a metallic catheter covered by hard rubber which combines both rigidity of metal and the poorer heat-conducting quality of hard rubber. The caliber and lumen of this catheter are of ordinary size and being flexible, its distal curve, if desired, may be changed as it can be bent almost as freely as a silver catheter.

I have found that the sensations of the patient and familiarity with the heater precludes the possibility of inflicting unnecessary pain or doing any damage.



It is not my intention at this time to enter into a detailed discussion of the merits and rationale of hot air, nor to enumerate in detail the cases treated. Nor is it necessary for me to emphasize the superiority of Eustachian catheterization over other methods of middle ear inflation in cases of chronic middle ear deafness. Of one thing, however, I am quite sure and that is, that the use of heated air in Eustachian catheterization is not only soothing to the patient and of therapeutic value, but that it is decidedly more agreeable than the shock from a cold blast of air formerly used. Observations made in the treatment of a series of cases of chronic middle ear deafness disclose the fact that the improvement was more marked after each individual treatment with the "Heater" and the progress towards recovery more rapid, and that the results were in some cases brilliant. To be sure, much better results were obtained in the hypertrophic than in the hyperplastic cases; yet it was noticeable that in a few cases where the prognosis from a pathologic standpoint was bad and treatment pronounced as hopeless, the patient declared that there was subjective improvement especially in the relief of that usually distressing tinnitus.

In view of the difficulty of introducing superheated air in the

middle ear cavity it becomes a matter of speculation as to the full value of the hot air treatment above outlined.

In the series of cases thus treated I have used the "Heater" in connection with tympanic massage and the use of the vapors of iodine, menthol, camphor, etc., by the intercalation of Pyncheon's modification of Buttle's inhaler (charged with a piece of fine sponge, medicated with a few drops of a mixture of equal parts of menthol, camphor, tincture of iodine and chloroform) between catheter and the "Heater." (See illustration.)

In all cases the nose and naso-pharynx received appropriate treatment. The treatments were given at intervals of two or three days.

In conclusion I wish to call attention to the charming effect of using the "Seelye Heater" and the Pyncheon inflator (with the medicated sponge) by Politzerization, for the persistent otalgia and annoying fullness during the convalescent stage of an acute otitis media.

905 Stewart Building.

SOCIETY PROCEEDINGS.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY—EIGHTH ANNUAL MEETING.

(Proceedings continued from page 630.)

Tuberculosis of the Middle Ear with Report of Cases.

Dr. Max A. Goldstein, of St. Louis, was the author of this paper.

(This paper will appear in a later issue of THE LARYNGOSCOPE.)

DISCUSSION.

Dr. Robert Levy, of Denver, said that if we more often resorted to such microscopical examinations the literature of this class of cases would probably be extended. While not questioning the diagnosis at all he would suggest that in some cases in which tubercle bacilli were found there was the possibility of the extraneous presence of the tubercle bacilli.

Dr. E. B. Dench also expressed the opinion that this method of systematic examination if extended would probably show evidence of tuberculosis in very many more cases. This had been the experience in joint tuberculosis. The paper was certainly most instructive and suggestive.

Dr. J. O. McReynolds reported the case of a child six years old, who had been brought to him some years ago with chronic disease of the middle ear. He did a radical operation and completely cured the local condition. Two years later the patient developed disease of the spine and hip joint, and died of tubercular meningitis. He looked upon this case as an example of primary tuberculosis of the middle ear. He would like to know if there was any scientific ground for the popular notion that the healing of tubercular process in one part of the body would result in its breaking out in another part.

Dr. H. W. Loeb said that tuberculin should be used in these cases with a view to determining the presence of tuberculosis elsewhere. He did not think a reaction would be obtained from the process in the ear.

Dr. G. L. Richards asked for the experience of Dr. Levy with regard to the tuberculin test.

Dr. Levy said that in very incipient cases of tuberculosis the tuberculin had often cleared up the diagnosis, but he had never used it in connection with purely local tuberculosis.

Dr. Wm. L. Ballenger, of Chicago, said that he had had no experience with the tuberculin test in local processes, but he had observed its action in incipient tuberculosis. He mentioned two cases in which experts in physical diagnosis had found no pulmonary tuberculosis, and yet the appearance of the larynx suggested tuberculosis, and the application of the tuberculin test produced the characteristic reaction. He said no reason why tuberculosis should not be primary in the larynx and in the middle ear.

Dr. John A. Thompson, of Cincinnati, said that it was claimed that tuberculosis is always first a disease of the lymphatic glands, either of Waldeyer's ring or of the intestine, and that tuberculosis never occurs in the lungs until the lymphatics at the root of the lungs are first involved. This, he thought, would enable one to make a diagnosis of tuberculosis before there were any physical signs in the lungs. In cases of obstinate catarrhal laryngitis with an evening rise of temperature, even without physical signs, he favored making the diagnosis of incipient tuberculosis and sending the patient to a proper climate. He had known several such cases to subsequently develop pulmonary tuberculosis.

Dr. Goldstein said that the remark made by Dr. Levy simply corroborated his own view with regard to the possibility of local tubercular infection.

SECOND DAY—TUESDAY, JUNE 3.

**Report of a Case in which Laryngeal Symptoms Complicated
Purpura Hemorrhagica.**

Dr. Joseph T. Gibbs of Philadelphia, reported this case. The patient, a man of forty-two, had been well up to three weeks before admission to hospital on November 3, 1901. At that time he had been vaccinated, and ten days later the legs became swollen and a hemorrhagic rash appeared upon them. About this time there was a bloody discharge from the bowel. There were subsequent crops of hemorrhagic spots, and eventually the urine became bloody. On December 19 the speaker had first seen him because of an attack of hyponoia, and crowing respiration that had existed for thirty-six hours. The entire larynx was red; the breath sounds were weak, and there was marked laryngeal stenosis. On the following day after vomiting much chocolate colored mucus, the breath be-

came nearly normal, and the larynx then showed less infiltration and the surface of the mucous membrane was covered with fluid blood. An application of cocain and adrenalin gave marked but temporary relief, the hemorrhage recurring, and the patient dying the next day of exhaustion. Evidently the dyspnoea was due to hemorrhagic oedema of the submucosa of the larynx similar to the subcutaneous purpuric spots in simple cases. The relation of the illness to the vaccination was interesting, but by no means clear. The possible relation between the adrenalin and the last hemorrhage was also worthy of consideration.

Hemorrhage in Nasal Operations.

Dr. John O. McReynolds of Dallas, Texas, instead of reading the full paper on this subject, reported one case of severe hemorrhage occurring after the use of adrenalin. The case was that of a man of 25, from whom he removed without difficulty an exostosis situated rather high in the nose. The hemorrhage occurred almost immediately after the patient's leaving the office, but he did not see the man for about two hours, and then he was almost exsanguinated. The hemorrhage was controlled by packing the posterior nares.

Dr. W. Freudenthal of New York, exhibited a device which he used for controlling hemorrhage during and after operation. It consists of a double ice bag which is applied like a saddle over the nose, and is strapped around the head. In addition, he obtained valuable assistance from the use of stypticin internally.

Dr. J. A. Thompson, thought the hemorrhage was due to injury of one of the small arteries of the septum. Hemorrhage could be much more easily controlled by the use of cotton saturated with a styptic than by the use of gauze.

Dr. J. A. Stucky said that adrenalin should be used in the strength of one to six or eight thousand. He was accustomed to control nasal hemorrhage by the use of a little strip of dental rubber over which is placed a piece of Bernays' sponge or splint.

Dr. H. Bert Ellis of Los Angeles, Cal., said that according to his experience, hemorrhage was much less likely to occur after adrenalin alone than after the combination of adrenalin and cocain. Patients put on the chloride of calcium prior to operation were rarely troubled with secondary hemorrhage.

Dr. M. A. Goldstein said that it was his custom to saturate the gauze with oil or melted vaseline in order to make it impervious, and hence, suitable for controlling hemorrhage. He believed the

Simpson modification of the compressed cotton splint, shaped in the form of a nasal plug, was a very satisfactory means of controlling nasal hemorrhage.

A Physiological Statement of Some of the Symptoms of Mouth Breathing.

Dr. Wm. L. Ballenger of Chicago, presented this paper. He said that examinations of guinea pigs which had been kept in an atmosphere saturated with starch powder and nitrate of silver showed a remarkable thickening of the lining of the air vesicles, and this had led him to suspect that possibly a pathological change in the air vesicles might in some way cause an auto-intoxication which would find expression clinically in mouth breathers. In this class of cases the respiratory function of the nose was lost, and he did not doubt that this loss resulted in certain changes in the respiratory apparatus of the lung which impaired its capacity to carry on the interchange of gases. Faulty metabolism necessarily resulted, and carbon dioxide accumulated in excess in the blood, and then acted as a violent poison to the leucocytes. The scavenging function of these cells are thus impaired and the "half way" products of oxidation are left to circulate through the system. Oxygen being taken up in deficient quantity still further adds to the toxic properties in the blood, and gives rise to the nervous and developmental phenomena so familiar in mouth breathing in children.

It seems rational, therefore, to him, to assume that the symptom complex of mouth breathers is largely due to some change in the air vesicle walls of the lungs, whereby the normal interchange of gases (oxygen) and carbon dioxide is interfered with.

Dr. Eugene Vansaut of Philadelphia, thought the cases in which the respiratory function was abolished were very rare. In a case of severe adenoids in a child asleep there would still be found nasal respiration. If these persons were true mouth breathers there would not be much difficulty; it was because they remained nose breathers that nervous disturbances arose. There was not the slightest doubt that there was immense thickening of the epithelial lining of the pharynx and larynx, but he was disposed to doubt that such thickening extended to the air cells, except in severe cases of long standing.

Dr. J. A. Thompson said that the interchange of gases was practically an osmosis, and it was well known that this would not take place through a dry membrane. Where nasal respiration was ab-

normal the pulmonary alveoli became unnaturally dry, and this was probably one of the features in the deficient osmosis and oxidation of the blood.

Dr. W. Freudenthal, of New York, said that some years ago he had made a number of experiments on this subject, and had found that children with pronounced adenoids gave off about one-ninth or one-eighth of the normal quantity of moisture. Four months after the removal of the adenoids one boy gave off about the normal amount of moisture from the nose. If the nose failed to supply the moisture to the air this would be supplied for a time by the pharynx, but the latter would soon fail also.

Dr. Ballenger, in closing, said that it was not necessary to have complete nasal obstruction in order to produce the pathological conditions discussed in his paper. The point made by Dr. Thompson seemed to him very well taken.

Electric Light in Diseases of the Respiratory Organs.

Dr. W. Freudenthal of New York, read this paper: At first he had hoped to affect the deeper tissues by the actual passage of bactericidal rays into them, but it was found that these just penetrate the epidermis and cutis. In studying the therapeutic effects of the electric light one must distinguish between the incandescent and the arc light. The author said that he had been experimenting on this line as early as 1889. He had found the arc light preferable even for the larynx. He made use of the ordinary search light, in front of which the patient sits at a distance of six or eight feet. Most of the screens suggested for removing the heat were objectionable because they absorbed in large amount certain other important rays. He used the electric light in the treatment of both laryngeal and pulmonary tuberculosis, and although he had never cured an advanced case by this means, the treatment was of value just as was the use of morphine, heroin or hydrotherapy; indeed, the electric light treatment stood on the same level as hydrotherapy, but was superior to the latter because it relieved pain and facilitated expectoration.

Because of the neurotic element in cases of hay asthma the results of the electric light treatment had been even more conspicuous.

Dr. H. Holbrook Curtis asked the effect of direct sunlight on laryngeal phthisis.

Dr. Robert Levy said that he had never been able to satisfy him-

self, from the published reports, that the application of sunlight or artificial light was an important adjunct to the treatment. Equally good results, he thought, could be obtained in high altitudes where sunlight was most abundant.

Dr. Freudenthal said that he had applied sunlight and was accustomed to advise his patients to expose themselves to sunlight preferably while undressed.

Symposium on Diseases of the Accessory Sinuses.

Dr. Robert C. Myles of New York, introduced this symposium by a general paper.

Ethmoidal Cells.

Dr. Eugene L. Vansant of Philadelphia presented this paper:

Sphenoidal Cells.

Dr. Cornelius G. Coakley of New York, read this paper:

Antrum of Highmore.

Dr. F. C. Cobb of Boston, read this paper:

The Diagnosis and Treatment of Frontal Sinus Disease.

Dr. Lewis A. Coffin of New York, presented this paper:

The Technique of Frontal Sinus Operations: Report of Three Cases Without Nasal Drainage.

Dr. H. Holbrook Curtis, of New York, presented this paper, but for lack of time read an abstract only, and reported the cases and commented briefly upon them.

The entire series of papers of this Symposium was published in the July, 1902, issue of The Laryngoscope.

GENERAL DISCUSSION.

Dr. John O. Roe, of Rochester, presented a series of skulls to show the wide variations in the sinuses, thus emphasizing the necessity of modifying the method of treatment to suit the individual case. Not only were there marked variations in the location, size and direction, but in the presence of septa and in their number. In some cases there was almost no frontal sinus, showing the danger of using a drill in opening the sinus, which, under such circumstances, would pass through and injure the meninges. He had devised a curved drill run by an electric motor instrument by means of which it was easy to enlarge the natural channel from the frontal

sinus into the nose. The end of the drill was protected on one side by a shield so as to enlarge but one side of the passage, and thereby avoid a subsequent closure of the passage.

Dr. James F. McCaw, of Watertown, N. Y., spoke of the case of a lady who had had all her teeth extracted eighteen years before, coming under observation. Because of a chronic discharge and the presence of roughened bone, an incision was made along the alveolar process, and he was surprised on coming down upon a tooth lying in a cavity of the alveolar process and parallel to it. The tooth was removed and the cavity curetted, and since then there had been no trouble.

Dr. Thomas J. Harris, of New York, said that in his hands transillumination had proved of very little value in connection with the frontal sinus. In many cases in which pus had been found at operation there had been no darkening at all on transillumination, and in other instances when there was darkening little or no pus had been found. He agreed with Dr. Coffin that in each case one must decide whether the open or closed operation should be selected. He firmly believed that in cases in which it was not possible to find marked disease of the ethmoidal cells, the quickest and most satisfactory results would be attained by doing the open operation, as described by Dr. Coffin. This operation could be done thoroughly and yet leave practically no deformity.

Dr. Sargent F. Snow, of Syracuse, said: A large majority of these frontal sinus cases could get well with better drainage into the nasal passages; not that he recommended the internal operation exclusively in all cases. Quite recently he had discovered that a number of these chronic cases had an underlying syphilitic taint, and that a thorough course solved the problem. Investigation along this line is replete with surprises.

Dr. Thomas H. Farrell of Utica, asked for experience regarding the production of distressing symptoms by adrenalin.

Dr. R. C. Myles said that while small frontal sinuses did well under packing, large sinuses would require packing for an indefinite period, and would fill up with granulations very slowly. Some people could be kept very comfortable by having a permanent opening in the antrum.

Dr. C. G. Coakley said that he had found the periosteum so much diseased in many cases that he doubted if gentle curettage would suffice. Many patients who had suffered for a long time from antrum disease were greatly improved by a change of air. He

had tried the X-ray in cases of disease of the accessory sinuses, but in only one instance had he derived any material aid from his source except for the determination of the presence and size of a sinus. His rule was not to irrigate except at the close of the operation. The packing was changed as infrequently as possible, because each change of dressing disturbed the granulating process. By operating near the inner angle of the eye the resulting scar would be almost imperceptible.

Dr. L. A. Coffin said he could not see how Dr. Roe's drill could be made to pass down into the fronto-nasal duct. In one case in which there was pain and a shadow on transillumination, although no symptoms pointing directly to the nose, on opening the sinus an angioma was discovered.

A Study of Corditis Cantorum or Nodes with Special Reference to Etiology and Treatment.

Dr. Frank E. Miller, of New York, read a paper on this subject, and illustrated it by lantern slides and by the presentation of several patients, together with a demonstration of the exercises employed in carrying out the treatment.

(This paper will be published in extenso in a subsequent issue of THE LARYNGOSCOPE.)

Primary Epithelioma of the Uvula and Soft Palate, and Treatment with the Roentgen Ray.

Dr. James F. McCaw of Watertown, N. Y., read this paper, reporting a case. A screen of block tin with a cylinder of the same material served to direct the X-ray upon the desired part. The diseased surface had healed very satisfactorily under the treatment, the chief feature of the healing process being the comparative freedom from cicatricial tissue, and slight degree of contraction.

Dr. C. G. Coakley said that he had used the X-ray in a case of epithelioma of the superior maxilla, supposed to be of about three weeks' duration. The man refused surgical operation, and was treated by the x-ray for a week by Dr. William James Morton with some improvement. The patient then went away for a short time on business, and on his return the disease was found to have advanced very considerably.

Dr. Otto J. Stein of Chicago, referred to a case of leukoplakia of the soft palate and mouth that he had treated for about three months by the usual method without benefit. Last December the x-ray treatment of the case had been begun by Dr. Pusey, and after

two months he had reported the case as a failure. After another period of two months the result was still negative. In Dr. McCaw's case it seemed difficult to determine how much of the good result was due to the surgical measures, and how much to the x-ray.

Dr. McCaw said he believed most of the good results that would be obtained from the x-ray in this class of cases would be after incision of the growth. The result would also vary somewhat, depending upon whether a "hard" or a "soft" x-ray tube was used.

Report of a Case of Laryngeal Papilloma in a Child, with Remarks

Dr. C. Dunbar Roy, of Atlanta, Ga., presented this report: He had used the method of spraying the larynx with alcohol, as recommended by Dr. Delavan, and with good results in some instances. Various methods of treatment were discussed by the author. He advised that the children should be kept under observation, and the milder methods given a fair trial before resorting to surgical intervention. In adults, especially if there were interference with the breathing, the endolaryngeal method might be tried. In children, prolonged tracheotomy might be required. Laryngotomy should be done only when all other methods had failed.

Dr. Wendell C. Phillips, of New York, insisted upon the great care necessary in making the diagnosis of what seemed to be benign neoplasms of the larynx, because many of these proved to be malignant. In one such case occurring in his own practice, the growth proved to be an epithelioma in a very large stage. Almost any one observing this growth would have declared it to be a papilloma, yet microscopical examination showed its true nature.

Dr. Thomas J. Harris said he wished to emphasize the value, in prolonged papillomatous formations, of opening the trachea. A case was recalled in which the growths had been removed repeatedly by Dr. Nichols endolaryngically, and in which alcohol had also been used unsuccessfully. Prolonged tracheotomy was then resorted to in order to give the part a prolonged rest. This succeeded admirably.

Dr. C. G. Coakley spoke of the similarity in structure of so-called papillomata and syphilitic growths. He was in favor of removing the papillomata in both children and adults as soon as possible. Where the base was broad they were, of course, difficult of removal. It was his habit afterward to make use of alcohol in order to postpone recurrence. Where the attachment was small one removal would often suffice.

Dr. W. B. Shields of St. Louis, referred to the case of a physician of seventy years, upon whom he had operated twice, supposing the growth to be a papilloma from its gross appearance. Microscopical examination showed it to be a sarcoma.

Dr. Roy, in closing, said that he was opposed to the method of Coakley and Phillips of removing a portion of the growth for examination, because this afforded an excellent opportunity for auto-intoxication, and for the change of a benign into a malignant neoplasm. He was not in favor of removing a growth in the larynx as soon as found; it was better, in his opinion, to watch it carefully and test the effect of various medicinal applications.

Abductor Paralysis of the Larynx.

Dr. D. J. Gibb Wishart, of Toronto, Ont., read this paper:

(This paper will be published in extenso in a subsequent issue of THE LARYNGOSCOPE.)

Report of a Case of Epithelioma of the Tympanic Cavity, Involving the Mastoid.

Dr. W. H. Haskin, of New York, reported this case: The patient was a woman of forty-two, first seen in April, 1901. She complained of intense pain in the left ear, radiating over the head and down the neck. There was also an offensive otorrhea, and a history of a discharge from the ear at intervals for thirty years. A polyp was removed with a snare. Subsequently there had appeared what was thought to be a malignant growth. A complete mastoid operation was done, and pus found in the tip of the mastoid and disease in the squamous portion. Examination of the tumor indicated that it was not malignant. On June 24, the patient was readmitted with a swelling below the ear. The sinuses were opened up, and the granulations removed were then reported to be epitheliomatus. When seen on April 15, 1902, there were large secondary growths around the ear.

(To be Continued.)

WESTERN OPHTHALMOLOGIC AND OTO-LARYNGOLOGIC ASSOCIATION—SEVENTH ANNUAL MEETING.

CHICAGO, APRIL 10, 11 AND 12, 1902.

President, C. R. Holmes, M.D., Cincinnati.

Secretary, W. L. Ballenger, M.D., Chicago.

President's Remarks:—Gentlemen of the Association, and Officers: I bid you welcome, and it is with pleasure that I see so many with us at this early opening. I have reason to believe that this is going to be a successful meeting in every way, scientifically, socially—they have provided for us—and numerically. The association has taken on a rapid growth, and the officers who have looked and watched over it the past few years report it is rapidly growing. Last year we took in forty new members, and I believe there are now about seventy applicants on the list to be passed upon; so that we are growing rapidly. There is need for an association of this kind. There are a great many men throughout the West who cannot go East, and there are, especially in the Ophthalmologic Association, a limited number only admitted, and it is for the general good of the profession throughout the West if we have a good, scientific, working association. The physician who has been properly qualified, and who has conducted himself according to the ethics and the standards of the American Medical Association, should be permitted to enter. It is a good to him, the profession at large, and certainly to his patients. No man comes to a meeting of this kind without going back much benefitted, and his benefit is for his patients.

I have thought it best not to give the stereotyped presidential address, but I am going to give instead an illustrated lecture on

The Development of the Ear from the Lowest Forms of Animal Life up to Man.

The lecture was profusely illustrated by stereopticon views, showing the minute anatomy of the organs of hearing in its gradual ascent in the animal world.

The Dynamics of Nasal Disease in Relation to the Maxillae.

G. V. I. Brown, of Milwaukee. This paper will appear in a subsequent issue of *THE LARYNGOSCOPE*.

DISCUSSION.

Dr. Black, Milwaukee:—In regard to what has been said of the muscular action of the process of mastication upon the deformity of the septum is well illustrated in a case that came under observation about two years ago, Mrs. T. G., aged 33. She came to seek relief for extreme deafness, and had just recovered from a severe attack of nervous exhaustion. Her physical condition was greatly reduced, and she had difficulty of breathing through the nose, owing to a lateral deflection of the cartilaginous septum. She being in such an emaciated condition that it was impossible to operate upon her, and having examined her mouth and found irregularities in the shape of her arch, the left side being three-sixteenths of an inch higher than the right side, I suggested that she go to Dr. Brown, and have the teeth regulated, and in that manner be able to masticate her food better, and so be in better shape for operation. Dr. Brown commenced widening the arch. About ten days afterward she came to the office, and very much to my surprise, remarked that she could breathe fairly well through her nose, and after continuation of the pressure, Dr. Brown applied by the apparatus, the stenosis was still less, and when that part of the work was finished it was found, by a very slight operation after the manner of Asch, the septum was straightened and complete nasal breathing was restored; also at the same time her speech, which had been very hard to understand, was remedied, so it was quite easy to understand what she said.

The next case was a so-called saddle nose; a split septum. That was divided and produced a condition by which the air passed through the nose.

Post-Operative Management of Intra-Nasal Surgery. By Dr. M. A. Goldstein, St. Louis.

(This paper will appear in full in a subsequent issue of *THE LARYNGOSCOPE*.)

The Best Means of Removing Turbinal Obstructions. By Dr. J. W. Murphy, Cincinnati.

(This paper is published in full in this issue of *THE LARYNGOSCOPE*.)

DISCUSSION.

Dr. Holmes, Cincinnati:—In 1888 I began to look about for some more suitable method of treating these hypertrophies than by the galvanic cautery. While the latter has its place in nasal surgery, and especially where we only wish to reduce a moderate amount of swelling, yet in extensive reduction I think it is not the best thing. It does not remove enough tissue. It must create some slight infection. All this is avoided by a clean, surgical operation. My first hundred cases or so I used the galvanic cautery and mixed it with the operation. I found that unsatisfactory. I then used the post-nasal sound and found the following winter it was necessary to do more operating. I then removed the swollen portion of the turbinated, but there would be cases that would come back. I then determined to remove a small portion only, making a bone scar. (Illustrates on the board.) If you can cut off a portion of this, then take off an edge of the bone and then finish the operation with scissors, you will have a V-shape. It becomes like this—nothing but a cicatricial scar, and no matter how much swelling over the rest of the turbinated body, you will always have that condition. After about 600 or 700, my nostril on the right side was obstructed frequently, and also my right Eustachian tube; Dr. Vail cauterized at intervals for a year, and finding it did not relieve me, I determined to have this operation done upon myself. That has been six years ago, and an Eustachian catheter has never passed my nostrils since.

We will do damage if we take too much. We can also remove too little. You should cocaine your patient first thoroughly. There are three grades of swelling; a catarrhal swelling that will recede entirely; then the beginning pathological swelling, and the third stage where there are fibrous changes taking place that nothing will relieve but removal. What you want is to put the nose into its normal condition, and unless you study your cases carefully and watch them preceding the operation and study them under the influence of cocaine you will remove too much or too little tissue. It is easy to remove a whole turbinate; it is difficult to take out a small piece. I have operated between three and four thousand cases in private practice, and my own right nostril is a practical demonstration that I believe in the operation.

Dr. Stillson, (Indianapolis):—I avoided the operation of turbinotomy and fought it on the floor of this society for a number of years before I was brought to the knowledge that sometimes our preju-

dices stand uppermost in our minds, and we owe it to ourselves and to our patients and to the profession to have a reason for the faith which is in us, and that when we do have such a reason we should have the courage to act. I was brought to this knowledge through a patient who was under my care. I think I treated the man for nearly a year. He passed from under my observation, and I did not see him for some time, one day he came in and said: "I have come to make an apology to you." I did not know he owed me one. "I want to do so now." He was hearing excellently. He recalled to me that he was under my care, and said that just a little while after he left me he had another relapse, and happened to be in Cincinnati, and a brother took him by the arm and took him down to Dr. Holmes. The doctor performed turbinotomy, and in a few days or weeks he had recovered, and has not had a bit of trouble since. Of course, what could I do but compliment the man upon his success, and that he had done the right thing. But I commenced to think of this thing I had been fighting, and it occurred to me I should look more into it, and have less prejudice, so I began operating these cases in this way.

I wish to say that my views have been very materially modified and changed.

Dr. Vail, Cincinnati:—I was with Dr. Holmes when he first began these investigations in connection with this operation in 1889—I was with him 10 years—and at that time there were no instruments, you might say, for the performance of this operation, and we had to devise ways and means to perform it. We did not know much about the packing with the gauze, and we had the patient bleed frightfully the day following the operation and we tried ice and everything known at that time; packed it then with cotton. Did not know anything about gauze. Dr. Rhodes, just from Vienna, showed us a packing something like this, and we packed a man's nose, and it was successful. We make these packs and keep 100 of them ready in a jar already sterilized, and no delay is necessary. We were then prepared to control these hemorrhages. Had no adrenalin. We used 20 per cent cocaine, and we now find five per cent will produce anaesthesia. We use the Kramer speculum, Pollitzer ear forceps for packing cotton in the nose. The most important instrument is the Holmes nasal saw. It has a ball on the end of it, which I object to because sometimes on account of this you may have difficulty in withdrawing it. If the ball were not there you could pull it right out. We also use the old-fash-

ioned angular packing forceps. With reference to the adrenalin, we do not pack it in with the cotton. If you put it in the nose and conceal it there, you cannot tell what it is doing, and when you take everything out you are apt to find you have too much effect with the adrenalin, and when you come to operate you cannot tell how much to take. I allow the cocain to remain seven minutes and then take 1-5,000 adrenalin solution, and swab out the nasal cavities and watch the effect while preparing to operate. In cases of obstructed nasal respiration the operation is done to enlarge the lumen of the nose. I have always found the finger-like projections Dr. Stillson mentions. I have found the posterior end hypertrophied—looks like a miniature bunch of grapes. I leave the front almost entirely alone, and get all I can of the back; saw my way out and pass the scissors in and clip the rest off; it takes one minute to perform the operation. It is bloodless and painless in this way.

In regard to the packing would say that Dr. Goldstein's technique takes care of this nicely, and I endorse it, except the use of naseline. Of course, if there is any blood it would simply roll over the packing, and I should think the dry packing of gauze would be very much better; it swells when it gets wet; vaseline would have a tendency to prevent the absorption.

Dr. Reynolds, Louisville:—The plain, simple method described by Dr. Murphy, and the technique of Dr. Goldstein, may be applied in cases where no deformity exists except a narrowing of the passages. But in those cases where there are extensive deformities of the septum, where synechia exist between the turbinates and the septum, where there is great curvature of the septum on the obstructed side, and where infection has already been set up in the sinuses, even, difficulties begin to present themselves. The simple cases do not need to be further illustrated, perhaps. I am pleased to know that Dr. Holmes' saw is at least narrow. Were it one-fourth thinner in substance it would be better. I have tried a great variety of saws to go around the curves, and get in the middle an inferior turbinate to remove a sufficient part to allow a permanent opening, and to facilitate drainage, and being an angler, I have split shot in my possession, and I have drilled a hole in this and tied a silk thread in and pressed it with the forceps, and so enabled me to force hard enough to force the necessary curvature, and having got in in that way, it is an easy matter to work the split shot off. If it does not come away, I poke up through the patient's mouth

and push it off. But, holding to the silk string, I hold on to the shot.

I take the cotton roll as Murphy described and roll it on a piece of copper wire and dip in adrenalin solution and pack, and by the time the packing has been complete, and you get ready to put the cocain packing in you may then take out the other and follow with the cocain packing. In regard to the amount to take from the turbinate, I take just enough to cure. It sometimes means the whole bone, and sometimes only a narrow strip along the edge. As to the packing after the operation, I use the gauze. First spread it out and roll cotton in it, then drop the adrenalin solution on it until thoroughly saturated; then take the angular forceps and place it along the posterior part, and raise it as far as possible with a probe. I have operated without the loss of more than two or three drops of blood, and sometimes removed the packing in 24 hours, sometimes 48, and in many instances have had actually no hemorrhage at all. I object to the use of oils and ointments in packing material. I am satisfied they prevent absorption.

Dr. Pynchon, Chicago:—I am in accord with the teachings of the papers, and also with the remarks made. It has occurred to me of late years that the character of my patients has changed, as I formerly cauterized the inferior turbinate, and lately I rarely cauterize the inferior turbinate. The surgical is undoubtedly the best way to take them when they are enlarged or obstruct the nostril. The method of operating on the inferior turbinate seems to me to possess some little difficulties. The way Dr. Murphy shows it on the specimen, where the nose was sawed off in the middle, it was easy to get in as he wanted, but I have looked into a great many noses, and I acknowledge I have had difficulty in using this little saw. But I will experiment more, and maybe by using this saw with a straight handle, I may succeed better. This operation, as has been described, is for noses where there is a reasonable amount of space between the turbinal and the septum; but once in a while we find a case where the inferior turbinal is very large. It is necessary to make a more aggressive attack. I am not pleased with the principle of removing too much of the inferior turbinal. Harris, in the New York Medical Journal, about two years ago, reported the complete removal of the turbinal with fine results. We are bound to have more operating of this kind to do when we come to the middle turbinal. In a good many cases of hypertrophy of the middle turbinal it is perfectly easy to introduce shears and re-

move the narrow end, as Dr. Holmes says, but once in a while we find a case where it is so tight against the septum that it is impossible to do so. I advise the use of the trephine. A round hole is made the size of the trephine, which permits the introduction of one blade of the shears, and the other blade has been introduced below the middle turbinal; in that way the entire end can be cut back as far as the hole goes, that is made by the trephine. After that introduce a cold snare, and cut off a good sized piece. Secondary contraction takes place, so that very nice results are obtained, and even afterwards, a person might be in doubt as to whether any operation had been done at all. The object is to improve the ventilation and drainage of the nose, and removing it in that way allows the air to go to the attic, which is so essential for the ventilation and drainage of the sinus. After treatment: I have packed in some cases, but not as much as I should. I would use the high carbolized douche. If there is anything in treatment after operations that I am thoroughly appreciative of it is the use of the hot douche after any operation which involves the cartilage or the bone in the nose. The hemorrhage and everything of that kind is reduced.

Dr. Goldstein:—At one of the earliest meeting of this society five or six years ago, I was inclined to take a conservative stand about nasal operations, and while I am as ready to be radical as any of you when occasion demands, I think we do too much operating. There seems to be a general enthusiastic spirit just now as the result of Dr. Murphy's excellent description of Dr. Holmes' operation, but I think you will find a great many of these conditions must be modified without quite so much enthusiastic and radical surgery. There is a time to operate, and there is a time to introduce therapeutics, which is quite as satisfactory and less of a nervous wear and tear on your patient and less of a risk. I fail to understand how these gentlemen who have operated so frequently in this particular form of trouble get along so well with so little hemorrhage. I have had much of it in my own work, and have seen it in the work of others.

Why such practical men as Dr. Reynolds and Dr. Vail fail to appreciate the necessity of looking after the post-operative condition as indicated in my paper is not clear to me. Why such a thing as an oily medication, which we use everywhere else as an admirable therapeutic agent, should fail to respond equally as well in the mucosa of the nose, I fail to understand. I believe you will

find that a plug saturated with antiseptic petroleum oil will stop hemorrhage quicker than a dry plug every time. I believe the method advocated originally by Pierce and modified recently by myself, will answer for most of the mild cases where the bone has not yet been involved, and I do not believe we are ready at present for radical surgery in the nose to the exclusion of all other treatment.

Dr. Hollinger, Chicago:—The modifications of these operations are these: You find little osteophytes protruding into these swellings. (Drawing.) You first cauterize down to the bone and then you put the snare around it, and it simply depends on you if you make the loop large enough, and you cut off all this part quite easy. In closing the snare you will get a little of the bone. If you simply lower the tip of your snare a little bit, the loop simply slips along this curve, and you get everything down to the bone quite close.

Dr. Kyle, Indianapolis:—I am not in favor of the gauze packing dipped in oil. The preparation I usually use, is dipping the gauze packing in a solution of alboline, 2 per cent, and menthol, then squeezing the gauze and inserting it into the nose in layers. I believe the menthol stimulates healing, and is a slight antiseptic. The other day I was talking with a genito-urinary specialist, and he suggested this, in certain cases of hypertrophy of the turbinate. He takes a tube this shape for inserting into the urethra for the cauterization of enlarged prostate gland, then takes the cautery point, and at this end has an arrangement whereby he can turn the cautery point at right angles. In hypertrophies of the posterior part of the lower turbinate, in certain cases, you can insert the canula and pass this cautery point along, turn it at right angles and push it into the enlarged tissue. I think in certain cases the idea suggested there might be of great value.

Dr. Stillson, Indianapolis:—There was one point I wanted to speak about, and that is the effect of these operations upon tinnitus. That has not been brought out. I have seen some very nice results follow these operations, in a number of which I have seen what seemed to me almost remarkable effects upon the tinnitus. My idea is that in some forms it is due to interference with the venous circulation. I believe that the antiseptic surgical operation is better than the cautery for the reason that in the former you get the redundant tissue removed, and it is not followed by congestion,

and in that way the circulation is restored to normal, and the tinnitus improved.

Dr. Todd, Minneapolis:—I heard Dr. Holmes read his report of 1,500 cases three years ago. His paper was on just such cases as Dr. Stillson has mentioned, pertaining to ear troubles. I think it is a mistake for the members to assume that the operation is a panacea for all nasal troubles, and I do not think the report indicated such a claim. I will tell of one case where this method gave me benefit where cauterization and removal of a part did not.

Patient could not hear ordinary conversation at any distance. After cauterization only temporary improvement in hearing. This occurred just after the Columbus meeting, and he went through this operation, and can now hear ordinary conversation at about 15 feet.

Dr. Jos. Beck, Chicago:—With regard to the pathology of this affection of posterior enlargements, I have examined a number of them histologically, and it would prove some facts about the bleeding of the parts. The main part of these enlargements undergoes degeneration. Cauterization of this part will affect it but slightly, unless you destroy it. Punctures are certainly of no avail, and you have to remove it in toto if you want good results. The German doctors are very cautious of this bleeding from the posterior turbinate, and by the way, it is said there is but little bleeding, but there must be, as a rule, considerable, and in my experience I have had this bleeding in removing these parts.

In regard to Dr. Pierce's operation as modified by Dr. Goldstein, I have used it during this year, and I report it to be not as well done by the aid of this instrument. I could take the probe after making the puncture, and it would bend around the irregularity of the turbinate. You can force the probe by this and get a deeper cauterization. The result is not lasting. There is a little relief for two or three weeks, and then it swells up again.

Dr. Goldstein (closing discussion):—The question of my modification of Dr. Pierce's method has been touched upon. I follow Dr. Holmes' principle in getting a certain amount of bone scar, because by that you get the best possible binding of the tissues and the bone, and get the best nasal lumen. I still make the cauterization with the probe and canula, and find it successful. I do not think sub-mucus cauterization is valuable where the pathological process has gone on to such an extent that the bone as well as the soft tissues overlying it is touched. In the so-called soft hy-

pertrophies the submucous cauterization is a simple form, and I believe you will obtain a lasting result with it.

Dr. Murphy (closing discussion):—I agree with Dr. Goldstein's method of treatment after the operation, and I follow the method he has suggested very largely in these operations. Each operative success in the end depends upon asepsis. Out of the 263 operations I have performed in this region I have never had a case of tonsillitis or sepsis following the operation, and I do not believe it is entirely due to luck, but to the suggestions as outlined by Dr. Goldstein of thoroughly looking to the after-treatment. They should be cleaned every day, twice a day. The patient is frequently able to attend to this himself, using some antiseptic powder after first spraying with an oily solution containing menthol and petroleum oils, and then with aristol I have had very good success.

I said in the start, I could not take up all the indications for this operation, but only desired to place the technique before you. When you understand that, you will draw your own conclusions as to when to operate. One of the indications is tubal trouble, and I reply to Dr. Stillson's remark about tinnitus that this operation has given me very good results in these cases. I do not believe you will cure your tinnitus until you remove these obstructions. If you will call to mind Dr. Holmes' illustration yesterday as to the circulation of the inner ear you will comprehend why the removal of these posterior hypertrophies relieves the tinnitus. Another indication is respiration. Where the nasal passages are not being properly used for the warmth and moisture, we operate for it. In regard to the packing, where we operate in the office and send the patient home, use the packing, but in the private hospital where the patient can be put to bed and watched, and kept quiet, the packing can be dispensed with with safety. I have never had a case of serious hemorrhage following this operation. These patients must be kept quiet. They are put to bed and kept quiet 24 hours, when the danger of hemorrhage must be lessened. I have not experienced difficulty in getting this saw in the nose. I have this width made to start with, and they are sharpened after each operation. I always have two sizes, a very thin one and one this size. The probe point is not necessary.

The Hypertrophied Faucial Tonsil: With Report of the Morbid Histology of the So-called Submerged Tonsil. Dr. E. O. Sisson. (This paper will appear in extenso in a subsequent issue of THE LARYNGOSCOPE.)

DISCUSSION.

Dr. Pyncheon, Chicago (opening discussion):—Some of the gentlemen who have passed opinion on this operation have criticized it on account of removing a portion of the anterior pillar. I have found no disadvantage whatever from removing the rear half of the anterior pillar, which is larger than it should be in these cases of hypertrophy. As regards the submerged tonsil, one feature not touched on is that frequently tonsils of this class contain sites which are filled with detritus containing pus. These sites are sometimes quite large, sometimes the size of a pea, and when the fold is being compressed it will fly out with force—once with such force that the patient felt it hit the other side of the throat, from the pressure of the electrode. It takes about 20 minutes for the operation. The electrode at a white heat, if allowed to be in the open air very long simply fuses. It should be at a white heat for the operation. It is hard to heat it beyond a dull red. There are a great many cases of quite lively hemorrhage which are never reported. Patients have reported quite profuse hemorrhage in several cases. I have tried to ascertain where and why this hemorrhage occurred. I have found that hemorrhages are more liable to occur in men than in women, and that there has been kidney disease with an atheromatous condition of the vessels. Secondary hemorrhage will occur in twelve hours if at all; never have known of any beyond that. The dangerous hemorrhage is apt to occur at the time of the operation.

Dr. Jos. Beck, Chicago:—I want to answer Dr. Pyncheon that I have made sections and microscopic examinations frequently, and I have found two things: (Illustrates.) He did not speak of finding muscular structure, which is there if the tonsil is removed with the anterior pillar. You will find the usual pillar structure at one end, and at one point fibres of muscle connecting the anterior pillar. It is of decidedly muscular structure. Almost all surgeons keep this structure there, and if it is of any value a little more or a little less will not make much difference. He removes it as far as the red line that he takes as his mark, and if I understand it right he dissects that off. The pillar has a function in deglutitation, and also in vocalization. It changes the voice to remove the pillar, you will find that in congenital malformations.

The second is the complete removal of the tonsil by cautery dissection. The physiology is not clear, but the pathology shows that if you remove it other members must take on the function. I

believe the removal of the entire tonsil is injurious. Remove all that is pathological. If you remove the pillar close to the lower part you are likely to have hemorrhage, which is serious. But if you allow that part to remain there is a certain contractility.

Dr. Kyle, Indianapolis:—I believe that Dr. Pyncheon would get fully as good result with removal of half of the tonsil as with removal of the whole tonsil. (Illustrates.) The anterior pillar has deteriorated from successive inflammatory conditions, and we have little holes which are perfect little culture tubes, as it were. It sets up an inflammation which extends into the tonsil proper. Secondly, if you take your cautery instrument and tenaculum pointing forward over the tonsil, you will have remaining that portion of the tonsil that will carry on the physiological function, and I believe it will be as satisfactory as to dissect out the whole.

Dr. Andrews, Chicago:—There is no necessity for removal of the entire pillar. It can be loosened from the tonsil and the tonsil removed very easily. I believe that the tonsil, whether submerged or not, should be caught by the tenaculum forceps and drawn out and cut off with some kind of tonsillotome. I feel it would be hard to convince me there is a better way.

Dr. Brown, Milwaukee:—In curing clefts of the soft palate we cut the major portion of the muscle from the anterior pillar, and any one will recognize that the muscle very quickly adjusts itself to the new conditions.

Dr. Goldstein:—I am sorry to know that the discussion of the removal of any part of the anterior pillar is under discussion at all. I do not know that I have ever seen a case where even the thickening of the muscular tissue has been sufficient to interfere with any of the functions of that part of the pharynx, and no matter how much dissection should be done, the anterior pillar should be left alone. Another point to be emphasized and barely referred to by Dr. Beck, is the unfavorable influence that the interference with any of the tissues of the anterior pillar might have on the plane of the larynx, when cicatrization takes place. I believe the point is rational, and should be considered in interfering surgically with the tonsillar area.

Dr. Todd, Minneapolis:—In regard to hemorrhage, my experience has been, as Dr. Pyncheon says, that they usually occur within 12 hours, and when they get to the point that they are extremely weak they stop. But in one case of a child five years of age, the secondary hemorrhage occurred on the second and fifth days after

operation. They were the most violent hemorrhages I have ever seen, extending over several days.

Dr. Vail, Cincinnati:—I have done a good deal of tonsil work and have observed the submerged tonsil. In regard to the galvanic cautery, I said three years ago I would never use it in a tonsil again. I inserted it in some of these crypts at white heat. The patient suffered no pain, but was not able to swallow even water; had to go to bed and had hypodermics, and I supposed it was excessive nervousness on the part of the patient.

A young man came in to let me operate on his tonsils, and wanted to go camping in ten days. I used the galvanic cautery in his throat with the same result, and these patients promptly left me. I have been very careful in avoiding the crypts now in burning the tonsil. If there is a large amount of hypertrophy, and the patient objects to a bloody operation, I burn the tonsil on the surface with the electrode and take them off layer after layer. I prefer to do it in several sittings. There is no reaction. In regard to dissecting the tonsil out with the cautery or using it in any way in the throat, it is unclean surgery, it produces a necrotic slough; there is a certain systemic reaction, which is partly due to the absorption of germs. When a case bleeds after the first day it indicates there has been sepsis. There is less bleeding where there is no sepsis.

Dr. Robertson, Chicago:—(Referring to Dr. Vail's drawing.) As I understand this, this is part of the tonsil, and not the secondary tonsil. In nearly all the cases we can take off this part; the part that lies beneath is the part that does the damage. This (illustrating) is the one that originates most of the abscess cases. In order to remove this part of the tonsil I have devised a special scissors. The crypts of the supernumary fossa are the ones that make the trouble. The ones that open down in swallowing. If you will take a probe you can pass it over the tonsil and these crypts are usually full, and no matter if you take the whole tonsil you still have enough effete matter there to set up inflammation. Unless you take out all of the tonsil, and all of the inner surface of this cavity, you will get unsatisfactory results..

Dr. Reynolds, Louisville:—The tonsil is a complex form of superficial lymphatic gland. When inflammation of the surface has taken place, and the two pillars become adhered with the upper part of the tonsil the so-called submerged tonsil becomes a constricted mass of lymphatic gland retaining the flow which should

circulate through it. I do not think any tonsil which has not been completely destroyed in its function should be removed. It interferes with deglutition.

Dr. Murphy, Cincinnati:—I have had considerable experience with this, and I secured a set of Dr. Pyncheon's cautery points, and made several attempts at removing the submerged tonsil; possibly due to lack of experience, it was painful to the patient and trying to myself. The reaction was considerable, so I let the patient go that day, but as soon as that healed I went back to my old method, which was described by Dr. Andrews. I find no better method than the tonsillotome. If you place it well in position and have a good strong tenaculum, you will be surprised at the amount that can be removed in this manner. Never had hemorrhage until about a year ago in a man about 25 years of age with large, fibrous tonsils. I removed them by the ordinary method. A severe hemorrhage followed in the right tonsil.

Dr. Pyncheon, Chicago:—About this line of redness; when the tonsil is diseased that line of redness is a very clear line of discoloration between the redness of the mucous membrane and the pillar beyond it. As regards the effect on the voice, I have never had any effect except favorable. It increases the high register two or three notes. By removing the diseased tonsil which keeps the posterior pillar from advancing, and permit the soft palate to come forward and there is an increased volume of air. In regard to the soreness, it is probably due to the amount of chronic inflammation in the tonsil before operation.

Dr. Sisson, closing discussion:—I would say to Dr. Beck that in the large number of sections I have made I have found very little muscular tissue. I cannot see that any harm would result from the removal of a small piece. With regard to the electro-cautery point in the puncture, I suggested that it be put between not in the crypts, unless it is passed to the bottom of the crypt.

(To be Continued.)

LARYNGOLOGICAL SOCIETY OF LONDON.

Seventy-fourth Ordinary Meeting.

(Continued from page 640.)

Case of Excrescences or Incrustations or Chalky Deposits low down in the Trachea.

Shown by Dr. Edward Law. The patient, a lady aet. 36, came under observation three days ago.

She had first noticed nose trouble as a child with an occasional disagreeable odor from the nostrils. She had employed various nasal solutions with a syringe or douche, but gave those methods up some years ago on account of the discomfort which they caused at the back of the nose and throat. For some years she has sniffed the nasal solution through the nose. Formerly the voice was very husky and hoarse, but not recently. She now complained of a constant short, hacking cough, loss of smell, indifferent taste, and a slight discharge from the nostrils. There was no history of a foreign body, no dyspnea nor expectoration, and the general health was satisfactory. On examination no atrophic changes were found in the nose, pharynx, or larynx, and nothing abnormal beyond some little catarrhal trouble and a small crust in the neighborhood of Luschka's tonsil, thus verifying her doctor's statement that she had to a great extent recovered from the ozenic trouble. Low down in the trachea a number of papillomatous excrescences, or crust-like or cretaceous deposits, were seen, a large one with ragged edges on the right side, and a number of smaller ones dotted in an annular or crescentic arrangement around the trachea.

The diagnosis was, in Dr. Law's opinion, very uncertain. He had thought of papillomatous excrescences, ozenic incrustations, herpetic crusts, keratosis, ulcer, enchondromata, chalky deposits.

Dr. Lack suggested that the growths in the trachea might really be crusts, a view also expressed by other members. The fact that the appearances had not changed in twenty-four hours, in his opinion, in no way militated against this view. They might remain stationary for a week. He suggested that Dr. Law might clear up the diagnosis as to this important point by syringing or spraying the trachea.

Sir Felix Semon added his own opinion to the same effect. What induced him to take this view was the co-existence of crusts in the naso-pharynx and (what could not be seen well with the light at their disposal in the adjoining room, but could very well with an oxygen light) the greenish color of the little protrusions in the trachea, which was quite different from anything with which he was acquainted, either of tracheal excrescences or of a papillomatous nature. As to remaining stationary for twenty-four hours or a week, he would like to mention a little experience of his own. When in statu pupillari he observed on a certain occasion an extraordinary (as he thought) excrescence on the right vocal cord of a patient in the Throat Hospital which he could not account for, and so after having it under observation for about a week, he took the patient to Sir Morell Mackenzie, and asked his opinion about the extraordinary growth. Sir Morell Mackenzie, after examining it for a moment, took a dry laryngeal brush, introduced it into the patient's larynx, and having withdrawn it, invited him (the speaker) to look again. He looked, and there was no growth to be seen.

Dr. Law:—With reference to the diagnosis, he was sorry it was still a matter of doubt, as the patient came from South Africa, and was leaving London the following day. Having carefully examined the condition, he was somewhat opposed to the diagnosis of ozenic crusts. At first the impression made upon him—and he did not at first see the excrescence or deposit with ragged edges on the right side, but only the somewhat annular arrangement of a number of the projections which were whitish in color—was that they were a sort of chalky deposits. Afterwards he thought of papillomatous excrescences, of keratosis, of a possible herpetic condition, of ozenic crusts, of an ulcer. But he considered the diagnosis very doubtful. Dr. Thomson had suggested there might be a breach of surface due to an ulcer; he would point out there was some tenderness over the affected part of the trachea.

Case of Removal of Epiglottitis for Tuberculous Disease.

Shown by Mr. R. Lake. The patient, a man æt. 30; he was working in a laboratory when the next man, in performing some experiment, produced a very thick cloud of nitrous vapor which irritated the patient's throat. A few days later, as he was suffering with dysphagia, he consulted Dr. Bennett, who diagnosed laryngeal tuberculosis, and found slight crepitations in one apex. The

stump is quite healed and healthy, but the arytenoid regions are still slightly swollen. His lungs now are apparently healthy.

Tuberculous Perichondritis; Case shown at the Society's Meeting, February 7th, 1902.

Shown by Mr. R. Lake. In this case the larynx had been exposed by a large flap incision on March 8th, and on incising the perichondrium a yellowish-white semi-transparent mass was found separating the perichondrium from the cartilage; it was roughly 3-16 of an inch in thickness. This was carefully removed, and a small spot of disease was found in the mid-line of the cartilage, which was cleared out. Mr. Lake said, had it not been for the advice of his colleague, Mr. F. Spicer, he would have excised the larynx, but he was glad he did not, the man being in good health and working at his trade, that of a baker. The mass removed was an organized product of inflammation, and was full of giant-cells, with bacilli in most of them.

Case of Geographical Tongue.

Shown by Dr. Pegler. This patient was a boy aet. 4, and he had been subject to "wandering patches" on the tongue since birth. They were more or less circular, and varied in size from a quarter of an inch to an inch in diameter. At present they were fewer and less marked than usual; they often disappear altogether for a few days, and then a fresh set succeeded them. The centre of each patch was red and raw-looking, the edges raised, reddish yellow towards the center, and white at the periphery.

Case of Syphilitic Necrosis of Intra-Nasal Structures, exposing to View the Opening of the Sphenoidal Sinus on each side, and of the Posterior Ethmoidal on the left.

Shown by Mr. Hunter Tod. The patient was an old woman, who came to the London Hospital Out-patients, complaining of headaches and dimness of sight. The nose was filled with crusts, removal of which showed present condition. The eyes were reported by the ophthalmic surgeon to be normal.

Dr. StClair Thomson said that no doubt the opening led into the sphenoidal sinus, but he thought it was quite open to question whether they were the natural ostia sphenoidalia.

Dr. Hill said that he had measured the distance of these ostia from the vestibule in this case, which was not more than $2\frac{1}{2}$ inches, and he thought that was one inch anterior to the real sphenoidal openings and lower down.

Dr. Watson Williams took the same view of this case as Dr. Hill, and did not think that these were openings into the sphenoidal sinuses. Without measuring it was, of course, difficult to judge distances, but it certainly seemed to him that they were too far forward, and he thought that there was no doubt that the syphilitic changes, which evidently had been very pronounced indeed, occurring in the posterior portion of the nasal passages, would be quite enough to distort the posterior ethmoidal cells and to produce the conditions in this case.

Mr. Tod, in reply, said he certainly thought that they are sphenoidal sinus openings, as they were very symmetrical and so central.

Cystic Adenoma of Pyramidal Lobe of the Thyroid.

Shown by Mr. Waggett. This occurred in a woman aet. 43, who first noticed a lump in the neck six years ago. A fortnight ago it had become painful, and increased to double its former size. At the present time a firm tumor, the size and shape of a bantam's egg, occupied the subhyoid region of the neck a little to the left of the middle line. Evidently a hemorrhage had occurred in a cyst.

Dr. Grant considered this a cyst connected with the thyro-lingual duct.

Mr. Waggett said he thought Dr. Grant and himself merely differed on the question of terms. The pyramid lobe of the thyroid gland was the lower part of what was called the thyro-lingual duct.

**THE GREAT MASTER IN MEDICINE,
RUDOLF VIRCHOW, HAS PASSED AWAY.
WE ALL RESPECTFULLY PAY OUR TRIBUTE AND
TRULY MOURN HIS LOSS.**

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E. W. FLEMING (Los Angeles). *South. Calif. Practit.*, July, 1902.

***Brain Complications in Suppurative Ear Disease.** F. G. STUEBER.
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Supra-renal Extract in General Therapy and in Oto-rhinolog in Particular. IVANOFF, A. *Med. Obozr.*, *Mosk.*, 1902, LVII, 890-898.

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***Investigations of Sound Forces by the Tuning Fork.** ZWAARDEMAKER
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X. MISCELLANEOUS.

***Hay Fever and Other Forms of Nervous Coryza.** EMMANUEL FINK
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***A Case of Epilepsy Cured by Operation for Empyema of the Maxillary Antrum and for Polypi.** WILLIAM GROSSKOPFF, *Arch. fuer Laryn.*,
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Connection Between the Climacteric and Diseases of the Upper Respiratory Passages and Ears. SEDZIAK, J. *Now. Lek.*, *Poznan*, 1902, XIV,
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Warszawa, 1902, 2s., XXII, 216-224.

Extirpation of Larynx, Epiglottis, Hyroid Bone and Anterior Wall of Oesophagus. CISNEROS, J. *Rev. de Med. y Cirug. Pract.*, *Madrid*,
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***Neurasthenia and Hysteria in Diseases of the Nose, Throat and Ears.**
E. B. GLEASON. *International Medical Magazine*, Feb., 1902.

Relationship Between Diphtheria and Diseases of the Ear. STANGENBERG, E. *Nord. Med. Ark.*, *Stockholm*, 1902, 3f., I, afd. 1, No. 4, 1-80.

SELECTED ABSTRACTS.

The Pathological Anatomy of the Hypertrophied Lower Turbinate.

—DR. S. CITELLI (Assist der Klinik).—*Archiv, für Laryngol.*,
Band 13 Heft I.

The material for this study was obtained from Gradenigo's clinic, and consisted of a large number of turbinals removed on account of the disease in question.

A short review of the histology of the normal mucosa is given, and then the alterations in the various structures are noted.

The hypertrophies are divided into (1) the diffused, (2) the papillary, and (3) the polypoid forms.

1. Diffused hypertrophy. This is the most frequent form. The mucosa is red. It is thickened throughout and is firmer than normal. On the surface may be seen here and there deep furrows, which bound irregular formed, rather flat areas. In these furrows are situated the openings of the glands.

2. Papillary hypertrophy. Here the furrows are more numerous and cross each other in every conceivable direction. The folds and ridges which in the preceding form were not very prominent, are here cut through by the furrows and present a conical or warty appearance. The mucosa has a granular papillary character, hence the name papillary hypertrophy. As a rule the color is more or less red. In some cases, however, the mucosa has an opaque, grayish color resulting from maceration of the superficial layers of epithelium in the stagnating nasal secretion.

3. Polypoid hypertrophy. Here the papillae are more pronounced, so that they present the appearance of small polypi. During life these papillae have a reddish translucent appearance. This form of hypertrophy is generally found at the extremities of the lower turbinal.

MICROSCOPIC APPEARANCE.

1. Diffused hypertrophy. Here the pathological changes seem to form two types: (1) a form of pathological change consisting of a hyperplasia of all the tissues constituting the mucosa, and (2)

when the changes are mainly restricted to the blood vessels and their immediate neighborhood. The first may be called the fibro-angio-edematous type, the second the vascular type.

1. The fibro-angio-edematous type.

The epithelium is here and there hyperplastic and leucocytes abound. The basal membrane is more in evidence than in the normal. In the superficial epithelial layers there is a profuse round-cell infiltration, more marked in the neighborhood of the vessels and the acinous glands. Occasionally there is a true lymph follicle, usually at the ends of the turbinal. The connective tissue is thickened, and has a reticulated appearance with a few fixed elongated cells. Numerous vessels, mostly capillaries, are present. In this layer the glands are more numerous than usual and consist of small acini.

In the deeper layers of the corium the blood spaces are enlarged and their walls thickened. The glands are large and show here and there slight expansions. The small cell infiltration may reach this region, but it is usually confined to the superficial layers. The connective tissue is hyperplastic and becomes continuous with the periosteum. The latter structure shows little change. The bony lamellae also vary little from the normal.

2. Vascular hypertrophy. The epithelium very slightly hyperplastic, the basal membrane slightly thickened. In the upper layers of the corium there is an infiltration of leucocytes, in the stroma that consists of loose connective tissue many little acinous glands are found, and the blood spaces with thickened walls may extend almost to the basement membrane. In the deeper layers of the corium the change consists mostly of enlargement of the blood spaces with markedly thickened walls. This thickening depends on a hyperplasia of the muscular fibres.

In some places the walls project into the blood spaces in the form of small polyps, and present a picture of a sort of intravascular myofibroma. The blood spaces are separated by a thick connective tissue which is the seat of an infiltration of leucocytes. The periosteum, the lamellae and the medulla are normal. The arteries of the latter are, however, much thickened, the membrana elastica being folded and at certain points very prominent. The arteries of the mucosa show the signs of a peri- and endarteritis.

2. Papillary hypertrophy. Here the changes involve all the structures composing the mucosa, but the characteristic change is the hyperplasia of the superficial layers. As stated above, this type

is characterized by the formation of papillae. Naturally, therefore, the microscopical changes will correspond with this, and the most marked hyperplasia will be found in the superficial layers. In some cases one can distinguish 8-10 layers of cells in the depressions between the papillae.

The widened canals of the glands open mostly in the interpapillary irregularities of the derma. It is thickened and occasionally sends off from its under side fibres which become merged with the upper layers of the derma.

Corium. The papillae consist of a stroma of loose connective tissue containing few fixed but many wandering cells and numerous capillaries. We also meet with reticular connective tissue with many leucocytes and small blood vessels. Here and there are the efferent ducts of glands, which are often dilated. Somewhat deeper lie acinous glands and blood spaces surrounded by a small cell infiltration.

The deep layer of the corium consists of hyperplastic glandular tissue which shows irregular dilatation, also of cavernous bodies which likewise are dilated and of a connective tissue rich in elastic fibres. The infiltration of leucocytes sometimes extends to this layer and even to the periosteum. Beneath this the connective tissue merges into the periosteum and the cell layer is rich in osteoblasts

3. Polypoid hypertrophy. In this type the same changes may be seen which characterized the type just described, except that here they are present in more pronounced form. The most prominent changes are to be noticed in the upper layer of the corium, where not only papillae but true polypoid elevations are formed. Both polypoid elevations and the interpapillary depressions are covered with a basement membrane and epithelial layer which (aside from the presence of numerous leucocytes) may be considered normal. Underneath the basement membrane is a rich infiltration of small cells, and here and there hyaline bodies either isolated or grouped in mulberry form.

In the polypoid elevations, capillaries are seen lying in the midst of a loose connective tissue. A characteristic of this type of hypertrophy is, that in the upper layers of connective tissue numerous cyst-like spaces are found. These are apparently not retention cysts. It is more probable that they result from a collection of fluid in the meshes of the connective tissue, and as the amount of fluid is increased the pressure becomes so great that the connective

tissue gives way, and a space is thus formed which assumes the character of a cyst.

These cysts often have no proper walls. The surrounding connective tissue forms a sort of wall. The fluid differs in no respect from those which are provided with a capsule. Few leucocytes are present, but very many are to be seen in the connective tissue immediately surrounding the cyst-like space. By confluence or by steady increase of fluid these cysts attain a large size, so that only few are needed to fill out the entire polypoid excrescence. One sees all stages, from the simple vacuoles in the connective tissue, to the large encapsulated cysts. The upper layers of the corium are also composed of a reticulum containing fixed cells with an elongated nucleus and little protoplasm. There is also frequently seen an irregular cell formation of a myxomatous appearance. In the meshes of the reticulum among the numerous capillaries are found an abundance of leucocytes. The deeper layers of the corium show evidences of hyperplasia, but in much slighter degree.

Alterations in the bone. These may be present in all three types of hypertrophy, but are more frequent in the degenerative hypertrophies. Two forms were observed, an ossifying osteoperiostitis, and a rarifying osteitis.

In the first form there is a small cell infiltration of the germinal layer of the periosteum. In this certain cells may be distinguished by their cyst-like nucleus. They are osteoblasts which are more numerous and richer in protoplasm than is normal, and lead to the formation of bony layers which are added to and thicken the turbinal bone.

The rarifying osteitis, on the other hand, is characterized by the presence of numerous osteoclasts which lie in peculiar cavities (Howship's lacunae), and by the progressive thinning of the lamellae.

Where the osteoblasts are numerous and crowded together, the bone appears rough and eroded. The lamellae become even thinner and the medullary cavities expand. Wherever either ossifying osteoperiostitis or rarifying osteitis exists, there is also present an inflammation of the overlying mucosa. The bone disease cannot therefore be regarded as primary, but as an example of an inflammatory process from the surface into the deeper structures.

VITUM.

The Application of Paraffine Preparations in Deformities of the Nose.—DELIE.—*Revue Heb. de Laryng. D'Otol. et de Rhinologie*, May 31, 1902.

A mixture of one part of solid paraffine and of four parts of liquid paraffine is the ordinary (American) vaseline whose melting point is between 38° and 40° centigrades.

Four parts of solid paraffine and six parts of liquid paraffine give a product fusible at 44°.

Five parts of solid paraffine and five parts of liquid paraffine give a product fusible at 48°.

Six parts of solid paraffine and four parts of liquid paraffine give a product fusible at 50°.

Eight parts of solid paraffine and two parts of liquid paraffine give a product fusible at 56°.

Each of these preparations is made by boiling in a water bath and preserved in a jar hermetically sealed.

The author concludes that the injection of paraffine is of valuable aid in destructive diseases, both of the internal and external parts of the nose. The choice of the quality of the paraffine must be decided by the condition of the skin and mucous membrane and by the effect obtained.

In nasal prosthesis, the immediate results obtained by the injection of paraffine at a low fusible point are as satisfactory as of the more solid forms. Neuman, of Vienna, however, claims that the injections of ordinary vaseline are always transient, and that at the end of a year or two, the nose returns to its former condition. The future alone can decide this point, and thus decides us in the selection of this most practicable form for the injections.

SCHEPPEGRELL.

Perforation of the Nasal Septum.—J. M. BROWN.—*Medical Standard*, May, 1902.

The author reviews the variety of causes of perforation of the nasal septum, in which he quotes authorities claiming occupation as the most frequent cause. It is said that 61 per cent of the workmen in a factory of copper-arsenic green have perforations. Again under idiopathic causes he mentions climate, as for instance the climate of the middle west, as a most common cause.

STEIN.

Hay Fever and Other Forms of Nervous Coryza.—DR. EMMANUEL FINK, (Hamburg).—*Haug's Vortrage, Band V, Heft 6.*

This monograph of 62 pages gives a general review of the history of the disease, a review of the prevailing methods of treatment, and a new procedure advocated by the author.

Fink is of the opinion that the seat of the trouble is the mucous lining of the auxilliary sinuses, and more particularly that of the maxillary sinus. His view of the pathology is that there is present an unusual irritation of the branches of the trigeminus, and that the hypersecretion is a result of irritation of the secretory fibres of that nerve.

His suggestion is that Aristol be blown through a fine tube into the maxillary antrum through the fenestrum ovale. He admits that considerable skill will be required thus to administer the remedy through the natural opening, and that one must keep on hand a supply of tubes with different curvatures.

VITTUM.

A Contribution to the Pathological Anatomy of the Faucial Tonsil.—DR. HANS RITTER (Bad Salzbrum in Schlesien).—*Archiv. fur Laryngologie, Band III, Heft 1.*

The studies were made from tonsils removed in toto from the cadaver. A large number were examined in order to determine the nature of intratonsillar abscesses. The author agrees with Finder that all abscesses so situated must be regarded as retention cysts. No communication exists between the cavity and the surface. No pyogenic membrane was demonstrable. Whenever these cysts increased in size until they pressed upon and broke into the peritonsillar connective tissue all the acute symptoms of peritonsillar abscess were manifested.

VITTUM.

The Diagnosis of Adenoids.—JAMES MOREAU BROWN, *Medical Standard, March, 1902.*

In establishing the diagnosis the author prefers the use of a special diagnostic forceps which is so constructed that there is no danger of wounding the healthy tissue, inasmuch as the solid blade is larger than the cutting blade. The instrument is readily passed into the naso-pharynx, the blades separated, and a small piece of the growth removed for inspection and demonstration.

STEIN.

Bacteriological Diagnosis of Membranous Inflammation of the Throat by a Simple Method.—FRANCIS CAREY BAYNE (Baltimore).—*Jour. Eye, Ear and Throat Diseases*, May-June, 1902.

A rapid differential diagnosis can be made as follows: Take an egg and boil until hard. Then with sterilized forceps break very gently into the air sac and peel off the shell and membrane immediately beneath it, leaving enough of the same to protect the culture. Make a swab from the throat and gently smear on the surface of the egg under that part of the shell which is left. Then take an ordinary cup and pass through a flame very rapidly several times to sterilize. Place the egg in the cup with the broken end down, and leave by a stove twelve hours. By this method is gotten an almost pure culture of diphtheria bacillus in from eight to twelve hours, this organism growing more rapidly than others usually present.

EATON.

Slight Deafness.—D. S. REYNOLDS.—*Cincinnati Lancet-Clinic*, June, 1902.

The author accepts for his subject of slight deafness, those cases defined by the Board of Referees of the Bureau of Pensions of the United States Government, as hearing ordinary conversation at six feet.

As the conversational tone differs so in different individuals this test can be of but partial value. Because the watch as a test instrument is at times scarcely distinguishable unless brought very near the ear, by individuals with apparently normal acuity of hearing, for ordinary conversational tones, he objects to the value of the tuning fork for the same reason.

STEIN.

Contribution to the Study of the Use of the Rubber Sound in Chronic Catarrhal Affections of the Eustachian Tube and Middle Ear.—URBANO MELZI.—*Archives Internationales de Laryng. D'Otol. Rhinologie*, March-April, 1902, No. 2.

An application of the rubber sound in such cases is not only of diagnostic importance, but also a therapeutic measure which is simple in its application, free of danger, and has given brilliant results. In a number of cases cited by the author, it produced marked benefit in cases in which the usual methods of insufflation and catheterization had been without benefit.

SCHEPPEGRELL.

Intratracheal Injections in Phthisis Pulmonalis.—W. S. ANDERSON, M.D., (Detroit, Mich.)—*Journal Tuberculosis*, July, 1902.

The author desires to indorse this method of medication, which does not in any way interfere with other methods of treatment, and can be employed in addition to such dietetic, climatic and medicinal means as may be best suited for each individual case. His results justify a more extended application of remedies per trachea which, though like other methods, obtained their best results in the first and second stages of cases, but is not without effect in advanced cases. The technique is similar to that of laryngeal applications. The patient should hold his tongue out while the operator introduces the canula of the syringe, guided by the mirror, during a deep inspiration. If the patient inhales gradually, slowly and steadily, the canula can be introduced between the vocal cords, and from one to two drachms injected without inconvenience. The operator should introduce the fluid gradually and steadily, not in spurts, and the whole amount must be introduced before the end of the inspiration, otherwise choking will take place. Only a limited number of drugs are used in this injection, and olive oil the only vehicle. In the majority of cases of injections the formula was liquid guaiacol, 2 per cent, and camphor-menthol (equal parts of camphor and menthol) 5 per cent. This seldom causes irritation, is not unpleasant, and has been most useful of all the formulae. Ichthyol, 2 per cent, with camphor-menthol, 5 per cent, has also been used. It seems to diminish the secretions. It is not as agreeable and usually has not proved as useful as the first formula. Iodoform, 1 to 2 per cent, has been employed, but it does not dissolve in the oil. A little less than 2 per cent can be taken up with the oil. Iodoform, considered valuable in all forms of tuberculous disease, should be specially indicated. The solution should be sterilized, which is easily accomplished by placing the bottle in a hot water bath for forty-five minutes. F. C. E.

Arsenic Iodide in Otology.—HASELTINE.—*The Clinique*, April, 1902.

The author's experience with the use of arsenic iodide leads him to regard the remedy as of great value in tubercular adenitis and in the adenitis seen complicating and accompanying suppurating ear diseases. In the chronic form of catarrhal deafness little or no benefit was seen from its use.

STEIN.

BOOK REVIEWS.

Grayson's Laryngology.—A Treatise on the Diseases of the Throat, Nose and the associated affections of the Ear. By CHARLES P. GRAYSON, M. D., Lecturer on and Instructor in Laryngology, in the Medical Department, University of Pennsylvania. In one octavo volume of 540 pages, with 129 engravings, and 8 colored plates. Cloth, \$3.50, net. LEA BROTHERS & CO., Philadelphia and New York, 1902.

We can offer no better criticism of this volume than to quote from the author's own preface. "If this volume shall be found to possess any one feature that will serve both to justify its appearance and to distinguish it from its many admirable predecessors, the author thinks it will be in the section on treatment and in the constant thought he has given to those who wish to know not only *what* to do, but *how* to do it. In many of the recently published works that deal with the diseases of these specialized regions so great a number of remedies will be found, and such a generous variety in the methods of treatment suggested, that they can scarcely fail to prove embarrassing to the younger and less experienced reader. The author has endeavored to eliminate this difficulty of choice by giving under each disease but one plan of treatment."

The association of the ear with the upper respiratory tract has been constantly kept in view and this section of otology is ably included in the volume, making it a good practical working volume for the student and general practitioner, and containing many good suggestions for the specialist.

The illustrations, many of which are taken from the excellent volume of Dr. Cryer, are satisfactorily reproduced, and the topography is exceptionally good.

M. A. G.

Studies of the Internal Anatomy of the Face. By M. H. CRYER, M.D., D.D.S., Professor of Oral Surgery, Department of Dentistry of the University of Pennsylvania. Cloth, 8vo., 176 pp., 143 illustrations. THE S. S. WHITE DENTAL MFG. CO., Philadelphia, 1901.

It was certainly an error of omission that this beautiful anatomical atlas of the Internal Anatomy of the Face has reached our reviewer's table at so late a date.

The very considerable practical work and anatomical dissections along these lines with which the author has been engaged, qualifies him to an unusual degree in the presentation of this subject, and makes of the atlas which he has presented to the profession a valuable reference volume.

It is of as much importance to us to study the atypical anatomical forms, as it is to know the usual landmarks of the accessory sinuses and regions of the facial and cranial bones. This volume should be closely studied, and the excellent anatomical plates carefully observed by every specialist in our field.

M. A. G.

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ORIGINAL COMMUNICATIONS.

(Original communications are received with the understanding
that they are contributed exclusively to THE LARYNGOSCOPE.)

POST-OPERATIVE MANAGEMENT OF INTRA-NASAL SURGERY.*

BY M. A. GOLDSTEIN, M D., ST. LOUIS.

Professor of Otology Marion Sims-Beaumont College of Medicine; Consulting Aurist and Laryngologist to the Alexian Brothers' Hospital, St. Mary's Infirmary and City Hospital; Aurist to the Jewish Hospital; Laryngologist to Mt. St. Rose Throat and Chest Hospital, Etc., Etc.

So much attention has been devoted to the question of the technical management of Intra-Nasal Surgery, especially to that of the nasal septum and turbinal bodies and the very detailed description of operations and their variations, while the matter of post-operative treatment and the many complications likely to arise in the course of this work, have been but sparingly considered. To the ambitious rhinologist, the conception and practice of a new operative technique are important eras, and reflect much credit to his originality and mechanical ability; yet the obscure features which are mainly responsible for his successful results, are his conduct of the case and his appreciation of the little points which prevent untoward results. So, for instance, the surgery of an Asch operation may be brilliantly executed, yet the neglect of proper splints and maintenance of calibre of the affected side of the nose will be productive of much dissatisfaction both to the patient and to the surgeon. Again, it is an easy matter to draw a furrow along the turbinal body, but carelessness in even so simple a technique may produce that "bête noire" of the rhinologist, a synechia.

It is the purpose of this paper to cite the many "little things"

*Read before the Western Ophthalmologic and Oto-Laryngologic Association, Chicago, April 10, 1902.

which are most prolific in reflecting unfavorably on the work of the rhinologist, and to indicate how they may be avoided.

It is an invariable rule with me to thoroughly cleanse the nasal passages anteriorly and posteriorly by a warm alkaline solution, either with the post nasal douche, or atomizer before every intra-nasal operation. If thorough cleanliness is a universally accepted principle in all branches of surgery, then surely the same rule should hold good in the conduct of nasal operations; yet how many of us are there who will take this simple precaution to avoid the frequent infections which follow even slight operations.

Let us grant that the nasal and post-nasal areas are easily exposed to infection, and are difficult to maintain in an aseptic condition; this only emphasizes the importance of cleanliness. From long experience we have ascertained that the nasal mucosa and underlying tissues can stand much punishment, and I assume that this is in greater part responsible for our indifference in thoroughly cleansing these areas prior to, and following operation.

I know that it is the practice of many operators to simply anesthetize the field of operation without further preliminaries, apply the galvano-cautery point or clip off a soft redundant part of turbinial tissue with snare or scissors, dust a little antiseptic powder over the surface and dismiss the patient. Then in the course of years when sufficient data have been collected, such an operator will report a series of cases of secondary nasal hemorrhage, or of pharyngeal affection or ocular disturbance, following the use of the cautery. Such a procedure may help to enrich rhinological literature, but reflects neither to the credit of the operator nor satisfaction of the patient. I have seen patients operated on in a bitter cold winter day, and sent home a few minutes after the operation with no protective dressing in the nose. We would not leave an open wound unprotected in any other part of the body, but do so with impunity in the nasal cavity.

Perhaps one of the most troublesome and frequent factors that may arise in nasal surgery is hemorrhage. To enumerate the various means at our disposal for checking hemorrhage after operation, would be a formidable undertaking, and I will content myself with a few suggestions that may apply to the majority of cases. I use some form of nasal plug or tampon after every operation, whether in turbinotomy or turbinectomy, the removal of a septal spur, the straightening of a deflected septum, curettement of an erosion or ulceration, or simple cauterization. This tampon is to

be carefully adapted to the entire surface of operation, and is to be snugly fitted so that an even pressure is brought to bear on all points. An irregularly packed mass of gauze or a small twisted wad of cotton will not accomplish this object. For a long time I used a narrow wedge-shaped applicator about which a layer of cotton was wound to the required thickness and calibre of the nasal cavity. This plug is neatly trimmed on both ends with scissors, and is saturated with benzoinol or other liquid petroleum. The excess of fluid is then gently squeezed out and the surfaces of the plug smeared with petroleum. The large end of this wedge-shaped plug is then grasped with forceps and inserted in the nose.

The advantages of preparing such a plug by saturating it with an antiseptic oil and greasing its surfaces with vaseline, are manifold. In the first place, an oily mass of cotton will adapt itself much more readily to the many small crevices and curvatures of the nasal channel. Again, if hemorrhage should take place even after the plug is in position, the blood will quickly saturate dry cotton and will drip anteriorly or posteriorly from the end of the wedge, and the oozing in that way may continue for some time. By preparing the plug with oil, its saturation by blood is avoided. Another disadvantage of a dry plug which becomes saturated with blood, is that when maintained in place for a day or more, the offensive odors of beginning decomposition are very unpleasant to the patient, and infection of the adjacent tissues is more readily effected.

The object of liberally smearing the outer surfaces of such a tampon with vaseline is to prevent adhesions between the walls of the nasal chamber and the cotton tampon. We have all experienced the difficulty of removing a dry dressing from the nose, and the ease with which the delicate mucosa is torn or injured and bleeding again provoked. This is overcome by the use of a thoroughly oiled tampon.

When a firmer pressure is desired, as in splinting the nose after an Asche operation, or to check a hemorrhage from the nasal cavity where the bleeding point can be fairly well located, the most practical and serviceable tampon is the specially prepared compressed cotton splint, as modified for nasal use by Simpson. These splints in compressed form are thin, and can be inserted in almost any nostril, no matter how much occlusion there may be. The special feature of this splint consists in its absorbing qualities. When water or the serous fluids of the nose come in contact with this plug, it swells to many times its original thickness, adapting

itself to the curvature of the nasal walls, and by the constant uniform pressure thus produced, such a splint forms the best possible means of controlling and checking hemorrhage, or maintaining the septum in its new position.

Another important value of this nasal dressing aside from its control of hemorrhage, is the favorable influence which it exerts during the healing process. By its uniform pressure, the operated areas can heal smoothly and all tendency to granulation and redundancy is avoided. I have often compared the results of similar operations in the nose, in the one case where tampons are used, and in the other where the nose is simply sprayed, or the surface medicated with an antiseptic powder. Where the cotton tampon is used, the wound invariably heals smoothly and flat; where no pressure is exerted, the rhinologist is frequently obliged to use caustics or the curette to remove the granulations which so frequently follow.

The time of retention of the dressing in the nose is also an important factor. My attention was recently called to a case where profuse hemorrhage followed the removal of a septal ridge, and the nasal cavity was tightly packed with gauze. As the hemorrhage had been rather unusual, the operator was tempted to allow the original dressing to remain in place for three days, and a serious sepsis was the result.

Under no circumstances should a first dressing be allowed to remain in the nasal cavity for more than forty-eight hours. If the cotton tampon or compressed splints previously referred to are properly prepared, their removal from the nose and the insertion of fresh splints can be accomplished with little or no bleeding.

The most difficult area of the nose to cope with, and to guard against hemorrhage, is in operations on the posterior ends of the turbinates. In some instances it becomes necessary to plug the posterior nares to control serious hemorrhage from this area. If this technique is undertaken from the pharynx, there are several procedures at our disposal. I think the Beloca's Cannula can be assigned to the rhinological period of twenty years ago. The sharp edges of the spring obturator of this instrument are capable of cutting or lacerating the post-nasal areas very severely, and thus adding additional points of hemorrhage. If it is necessary to introduce an instrument through the nose to the epi-pharynx so that the gauze dressings may extend the full length of the nasal channel, the same object may be attained by the use of a soft rubber

catheter, and the gauze or other dressing tied to the distal end and drawn forward.

Another method of packing the post-nasal space which I have found of service in several instances, is as follows: The left forefinger serves as a palate hook, and the right hand holds a long forceps curved on the flat, carrying a strip of selvedged gauze one inch wide. With the palate retracted well forward, the gauze can be packed well up beyond the bleeding posterior naris, and if necessary, can be extended some distance forward in the nasal channel. I have found this plan superior to that of drawing a length of gauze through the nose, because a dressing can be much better adapted to the bleeding surface, and there is no danger of lacerating the parts by instruments or dressings.

Still another method of packing the entire nasal channel from the anterior to the posterior naris, is to carry a narrow strip of gauze as before described, with a long straight forceps through the anterior naris back to the finger of the left hand introduced into the patient's naso-pharynx, and in that way adjusting the gauze and packing as firmly as may be desired, the full length of the channel.

Another point in the question of hemorrhage which should always be given consideration, is the determination of the bleeding point or area. It is a very natural temptation when a patient applies for relief from nasal hemorrhage, that the operator should pick up his swab or atomizer and medicate the entire nasal cavity with adrenalin chloride, cocaine solution, peroxide of hydrogen or other efficient hemostatic, and that no special effort is made to find the bleeding point. From a critical point of view, this should scarcely be considered scientific. In nearly all cases of hemorrhage from the nose, the bleeding area can easily and definitely be determined, and there is much more satisfaction and surety in applying our hemostatic directly to the spot. I recall one case of profuse nasal hemorrhage where I was called in consultation, where trichlor-acetic acid had been used as the hemostatic. The physician, not being able to locate the bleeding point, and to make sure of his hemostatic, had swabed as much of the interior of the nasal cavity as he could reach with pure trichlor-acetic acid. True, the hemorrhage was checked, but the entire mucosa of that side of the nose presented a very unusual appearance, and the patient was caused excruciating pain. This application was soon followed

by an extensive superficial slough, a condition brought about purely by professional ignorance or inaccuracy.

In the prosperous days of liberal galvano-cauterization, rhinological literature was replete with descriptions of synechia. Perhaps my observation that a synechia following cauterization is synonymous with mild professional carelessness, may be considered hypercritical. Synechia can usually be avoided if proper precautions during operation are taken. Unless mucous membrane of both are septal and the outer wall of the nose is injured, synechia rarely occurs. When a galvano cautery electrode is applied to the turbinal tissue, and the calibre of this part of the nasal channel is narrow, the heat from the cautery point will frequently also burn the septal mucous membrane. In the healing process, the parts which have been cauterized are more or less swollen, and where the nasal passage is small, the two opposing surfaces may come in contact, making a synechia imminent. Add to this carelessness on the part of the operator in the after-treatment of his case, and a disregard of proper precautions to keep the two nasal surfaces apart, and you have the main cause of synechia. The reason that we hear less of synechia to-day, is because the galvanic cautery has somewhat fallen into disuse.

Another form of synechia occasionally met with, is that following the removal of the middle and superior turbinal areas. The higher and deeper the location of the turbinal operation, the more prevalent are synechiae, for the higher and deeper the operative point, the closer is the nasal septum to the outer nasal wall.

In using the punch-forceps or scissors in operations on the turbinals, I always use the nasal tampon, both because it is the most available means of controlling hemorrhage, and because the interposition of the tampon is the surest safeguard against synechia.

The proper disposal of synechia has received some attention, and a number of ingenious suggestions have been offered for clearing the nasal passages of these obstructions. In my experience the most effective measure for removing synechia has been by means of the long narrow punch-forceps, especially the pattern of Miles', which has a long cutting surface and narrow blades. After thorough cocaineization and further retraction of the field of operation by adrenalin, one blade of this forceps is inserted above, and the other blade below the synechia. The closure of the forceps resects the redundant tissue, and the width of the cutting forceps regulates the amount of space which is obtained in clearing the nasal passage. I

then insert a Simpson compressed nasal tampon, covering the lateral surfaces of the tampon with gutta-percha tissue cut to the shape of the tampon. This prevents adhesion, and allows of an easier removal of the dressing and renewal of same. The use of the tampon following this procedure is imperative, for if the obstruction is simply removed and further treatment neglected, the granulations which form in the process of healing will cause the reformation of the synechia.

I believe that many of the difficulties encountered in operating on synechia, are accounted for by the fact that a dressing of this character is usually neglected.

Last year Lutz of Brooklyn, presented a very ingenious form of nasal plug. This is made of impression composition as used by dentists, can be readily molded to any shape desired by exposing the mass to gentle heat, and molding with the fingers. I have used this new form of plug freely after operations on synechia, and find that it is a very practical way of keeping the operated surfaces apart. The stearin composition is of a sufficiently firm consistency to maintain the shape of the plug after it is once introduced into the nasal cavity. The composition is water-proof, and the oily ingredients prevent sticking to the surfaces of the nasal mucosa. The main advantages of this plug are that it can be molded to fit any nasal channel accurately, and that by virtue of its oily consistency it is not saturated with the secretions from the nose.

In the conduct of the Asch operation, it is my custom to first use the compressed cotton tampon for a week or two, changing these plugs every other day. After the second week I substitute the composition plug for the compressed cotton splint. The patient is instructed how to insert and remove this plug, and can wear it comfortably for from six to twelve hours at a time. The plug is then removed, the nasal cavity sprayed or douched, and in this manner the continuous wearing of the plug is maintained until the parts have been thoroughly healed in their new position.

If the few simple observations here recorded will but emphasize the importance and necessity of careful attention to the details of the after-treatment in nasal operations, the purpose of the paper is accomplished.

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SYMPTOMS AND TREATMENT OF CHRONIC EMPYEMA OF THE SPHENOIDAL SINUS.

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The sphenoidal sinus has not often been brought before this Association for discussion. At the meeting in Rochester, in 1895, Dr. Bryan¹ in a contribution to the study of the diseases of the accessory sinuses, showed drawings illustrative of the relations of the sphenoidal sinus to the superior and middle turbinated bodies. At the same meeting Dr. Bosworth² reported a case of suppurative ethmoid disease followed by invasion of the sphenoidal sinus and death, with symptoms of meningitis. He had seen but two cases of sphenoidal disease and both terminated fatally. A discussion followed these papers turning largely upon the regional anatomy of the sphenoidal sinus and interesting mainly as showing how little familiarity with this region the fellows possessed at that time, and how limited had been surgical interference with this sinus. Ingals³ reported three cases of sphenoidal empyema, upon one of which he had operated perforating the floor of the sinus by means of an angular dental burr passed behind the soft palate. Gleitzman⁴ and Mulhall⁵ each reported a case in which he had broken down the anterior wall with a probe. In 1899, Bryan⁶ reported a case of combined frontal, ethmoidal, and sphenoidal empyema, followed by meningitis and death. The sphenoidal cavity was not opened at the operation. In 1900 Dr. Farlow⁷ reported a case of ozaena of probable sphenoidal origin. Last year Dr. Bryan⁸ presented a report of an extremely interesting case of combined empyema, including both sphenoidal sinuses, associated with adenoma of the ethmoidal and sphenoidal regions. Recently, though not a part of the transactions of this Association, Dr. Jonathan Wright⁹ has reported a very interesting case of latent unilateral empyema of the sphenoidal sinus presenting the gravest symptoms, with a brilliant result from surgical treatment.

Since Schaeffer in 1885 described an operation for the relief of empyema of the sphenoidal sinus there has been a gradual increase in our familiarity with disease of this obscure region and an in-

creasing number of reports of cases diagnosticated during life and relieved by treatment. Though sphenoidal disease can no longer be considered rare nor the consideration of its treatment a theme of great novelty, yet its diagnosis is still sufficiently difficult, and its treatment not so entirely satisfactory or free from danger, but that it merits further consideration.

My experience in the treatment of disease of the sphenoidal sinus is limited to twenty cases, in almost all of which the diagnosis was verified by operative interference. In but one case am I sure that the sphenoidal sinus alone was diseased, though I have recorded seven cases in which apparently the other sinuses were not involved. As the symptoms of sphenoidal disease are obscure, a tabulation and an analysis of the conditions and symptoms presented by any cases may not be without interest or profit as supplementing the reports of others.

TABLE OF PROMINENT SYMPTOMS.

	Male	Female	Headache	Eyes	Ears	Asthma	Cough	Pharyngeal Catarrh	Polypus	Malignant Tumor
Unilateral Chronic Sphenoidal Empyema.....	8	5	8	3	1	2	5	2	4	2
Double Chronic Sphenoidal Empyema.....	5	2	1	4	3	3

1. HEADACHE.

Nine cases complained of headache; in six this was the most prominent symptom, and in five the pain was unilateral. It was usually temporo-parietal, varying to frontal and occipital. In one case the principal pain was about the root of the nose. This case presented numerous polyps with extensive disease of the ethmoid cells on both sides. In another case the pain was localized in the ear in which there was a chronic inflammatory process. This constant, often severe, earache disappeared after the sphenoidal sinus on the corresponding side had been opened. In one case the pain was complained of only behind the eye with asthenopia. In three cases pain of more or less severity in the eyeballs was one of the symptoms. I have been unable to satisfy myself that pain localized at any definite spot is significant of involvement of the sphenoidal sinus. However, pain radiating from the frontal region to the nape of the neck and especially if associated with pain in the eyeball makes me suspicious of involvement of this sinus. The only

uniformity found in reported cases is concerning the very great severity of the head pains when pus is confined in this sphenoidal sinus

2. SYMPTOMS REFERABLE TO THE EYES.

Inflammation of the retina varying from limitation of the visual field for form or color to "choked disc" with total blindness has been reported. I have seen no cases in which the visual field was found abnormal or in which there was disease of the eye ground. In two cases asthenopia was a prominent symptom. I have mentioned the frequency of dull pain referred to the eyeballs. Diplopia and orbital abscess due to pressure from tumors of the sphenoid I shall refer to later. I have had temporary vertical diplopia follow operation in one case due to extravasation of blood into the orbit

3. SYMPTOMS REFERABLE TO THE EARS.

I have seen an interesting case in which pain in the ear, frequently severe, along with pain in the temporo-parietal region was the chief symptom. There had been a purulent otitis several months before I saw the case; this had ceased when the case came into my hands. Treatment, including surgery of the tympanum, was unavailing to relieve the earache, when almost by chance I discovered a sphenoidal empyema of the same side. Free drainage of the sphenoid relieved almost at once the earache as well as the hemicrania. A case has been reported by Dodd in which the principal symptoms were pain referred to a purulent middle ear. Death occurred from a purulent meningitis localized over the sphenoidal sinus which was found filled with pus. There was no disease in the region of the temporal bone.

4. ASTHMA.

Asthma was present in six cases. In three associated with disease of the ethmoid cells, there was polypus, as also in a fourth case, in which the sphenoid alone was involved. In one case there was empyema of all the accessory sinuses without polypus. In the sixth case there was empyema of the ethmoidal and sphenoidal cells. This symptom has not yielded to treatment in two cases. Three cases were much improved. One was untreated.

5. COUGH.

Eight cases presented as a prominent symptom chronic cough with expectoration. In five cases the expectoration was profuse

and purulent. Four cases presented the physical signs of chronic bronchitis and in one of them there was bronchiectasis. All had more or less involvement of the other sinuses and three presented nasal polypus.

6. PHARYNGEAL CATARRH.

Two cases complained especially of a pharyngeal catarrh. In one case this was the only symptom. It is a familiar hypothesis that some cases of pharyngeal catarrh may be due to latent sphenoidal sinusitis. The presence of pus above the posterior extremity of the middle turbinated body or depending from above the superior curve of the posterior naris, though indicative of sphenoidal empyema, is not a pathognomonic sign. It may come from the posterior ethmoidal cells instead of from the sphenoidal sinus. Indeed, as we know the posterior, ethmoidal and the sphenoidal sinuses are frequently a series of connecting pneumatic spaces through which disease may readily extend by continuity. The only assurance of sphenoidal empyema is the discovery of pus welling from the ostium, or the return of pus when the sinus is irrigated. It is often impossible to make a sure diagnosis unless the middle turbinate is first amputated. Often little or no pus is found in these cases in the upper back part of the nose or pharynx even at repeated examinations, unless by a fortunate occurrence of the discharge of the contents of the sinus about the time of the examination.

7. TUMOR.

I have found polypus associated with disease of the sphenoidal sinus in seven cases. In one case in which there was empyema of the sphenoid alone there was a small recurring polypus protruding from beneath the posterior extremity of the right middle turbinate. This ceased to recur after amputation of the middle turbinate and evacuation of the sphenoidal sinus. It is stated by several writers that polyps are rarely found with disease of the sphenoidal sinus alone. In six cases of polypus sphenoidal disease was associated with empyema of some other sinus, usually the ethmoid cells. In one case the maxillary sinus also was involved.

Malignant tumors have been found more frequently associated with disease of the sphenoidal sinus than with disease of the other sinuses. Two of my cases presented malignant tumors. In a hospital case, a man past sixty, a sarcoma developed in the course

of a year or so until the left nasal chamber with all its accessory sinuses and the naso-pharynx were filled with the growth. He suffered from excruciating pains referred to the left parietal and occipital regions. Proptosis of the corresponding eye without diplopia gradually developed. Suddenly in the course of two days there occurred redness and swelling of the upper inner angle of the orbit followed by perforation and free purulent discharge. A probe passed through the fistula thus formed entered the sphenoidal sinus by way of the orbit judging from the direction and measurement. An attempt was made to relieve suffering by a removal of part of the tumor through the nasal passages. The walls of the nasal chamber were necrotic and very thin. Death followed on the second day after operation and the post-mortem showed extensive purulent basilar meningitis with a small perforation of the cribriform plate. The sphenoidal sinus was filled with the growth, though I am unable to affirm its origin from this point.

The other case of malignant tumor springing from the region of the sphenoidal sinus has some features of interest. This patient, a woman, was first seen by me in 1895. She was then about forty years of age. She gave a history of catarrh from childhood marked mainly by a "dropping into throat," at times of an offensive odor. This was noticed especially when she lay down. For about one year there had been occlusion of the left side of the nose; recently the right side had become occluded. She had long suffered from pain at the root of the nose and had noticed a failure of memory within the past year. A pinkish polyp mass filled the posterior superior part of the left nasal chamber and protruded into the naso-pharynx, entirely filling the left posterior naris and overlapping the right side. After the removal of this tumor, whose attachment is indefinitely recorded as high up and back in the left nasal chamber, she had relief from her previous symptoms except some continued excess of secretion in the pharynx. My record of July 26th, 1895 reports "slight mucus excess on the posterior superior nasal wall—the anterior wall of the sphenoidal sinus." In December, 1899, she again consulted me with a return of headache, now occipital, and a thick yellow, offensive discharge into the throat. She had conjunctival irritation of the left eye but no disease of the eye-ground. A rather pale and dense tumor, much smaller than the one removed five years before, occupied the posterior superior portion of the left nasal chamber, apparently

springing from the juncture of the posterior wall and the septum. Its removal was again followed by temporary relief of symptoms. Dr. Gaylord, of the Gratwick Research Laboratory, reported this tumor to be an "inflammatory proliferation of the mucous membrane." I now removed the middle turbinate quite thoroughly and opened the sphenoidal sinus with sharp spoon and electric burr. After some months of treatment the patient was improved, but not relieved. In January, 1901, she returned with a small tumor at the same location and an increase of headaches. After removal of this tumor the sphenoidal sinus was systematically irrigated, the tumor tending to recur and occlude the sphenoidal opening though apparently not growing from within the sinus. The discharge was very slight and always dark and blood-stained. In January, 1902, she again consulted me with sharp, shooting pains mainly then in the right side of the head and above the right eye. She complained of pressure and fullness directly over the frontal region. I seared the small growth that had recurred, curetted its base and the sphenoidal opening freely. On January 20th under general anesthesia with an electric driven burr, I enlarged the existing sphenoidal opening downward into the floor of the sinus. A double, purulent otitis followed the operation. The discharge from the ears ceased early in February. The head pains were little if at all relieved by the operation. Dr. Gaylord reported the tumor last removed to be a malignant adenoma. After the first report of Dr. Gaylord in 1899 that the tumor then removed was an inflammatory proliferation I had supposed that the recurring tumor was of the same character and associated with the chronic sphenoidal empyema, until increasing suspicion of malignancy became assurance this year. Hartzfield¹¹ and Rosenberg¹² have called attention to a distinct swelling in cases of sphenoidal empyema close to the septum at the level of the anterior wall of the sphenoidal sinus which they consider an important diagnostic point. I at first supposed the tumor to be something of this character. On the sixth of March a left facial paralysis developed. Inspection and irrigation at this date showed the opening into the sphenoid to be large and the cavity to be clean. No recurrence of the tumor could be seen. The left tympanic cavity was apparently in as good condition as before the operation. My patient is now failing rapidly with increasing evidence of intra-cranial involvement; the facial paralysis continues.

Dundas Grant¹³ has reported in a case of sphenoidal empyema the spontaneous separation of a myxomatous mass attached to a small plate of bone which he regarded as the anterior wall of the sphenoidal sinus. I have had a somewhat similar experience in one of my cases.

From this analysis of my cases I draw the conclusion that we have no diagnostic symptoms of sphenoidal empyema. Pain radiating from the temporo-parietal to the frontal and occipital regions, with a scanty, purulent, at times offensive, discharge mainly into the pharynx, should awaken a suspicion of sphenoidal disease. An accompanying conjunctival irritation or dull aching in one or both eyeballs is still more suggestive. Cough, asthma and nasal polypus cannot be regarded as especially significant of uncomplicated sphenoidal disease.

TREATMENT.

In many cases the ostium of the sphenoidal sinus can be located and a cannula passed into the sinus for irrigation. Not infrequently, however, this cannot be accomplished without a previous amputation of part or all of the middle turbinate. My experience with irrigation of the sphenoidal sinus through the natural opening has not been satisfactory. Severe headache, sometimes lasting the rest of the day, has occasionally followed, and I have never succeeded in relieving the symptoms or controlling the empyema by this method of treatment. I may mention in this connection a peculiar formation of the discharge from the sphenoidal sinus that I have frequently seen when the sinus is irrigated through the ostium. It is not unlike a tadpole in shape and I fancy it is a similar form of discharge that Dundas Grant¹⁴ refers to as "a small pellet of mucus" washed out when the sphenoidal sinus was irrigated. As in the case of the maxillary sinus the ostium is so disadvantageously located for drainage that we may not expect irrigation through the natural passage to relieve a chronically diseased sphenoid sinus. Additional drainage and free access to the sinus must be secured by an artificial opening through the anterior wall—our only available point of attack.

No great advance has been made in the surgery of the sphenoidal sinus since Schaeffer first opened it in the living subject. Some modification of the sharp spoon is used to break down the anterior wall and to curette the sinus cavity so far as possible, the middle turbinate in part or whole having first been amputated.

Ingals' method of entering the sinus through the floor with a dental drill seems to me impractical and unsatisfactory. Tapoas¹⁵ suggests obtaining access to the sphenoidal sinus by way of an external opening through the frontal and ethmoidal sinuses. Bryan⁸ and J. Wright⁹ have both reported successful operations performed in this way. In an uncomplicated sphenoidal empyema, however, I cannot see that it affords great advantage either in simplicity or safety in comparison with the intranasal operation.

In a paper read before this Association last year Bryan alluded to the method suggested by Jansen at the Moscow Congress in 1897 of approaching the sphenoidal through the maxillary sinus when the latter also is diseased. Furet¹⁶ has opened the sphenoidal sinus by way of the maxillary sinus even when the maxillary sinus is not diseased. He suggests this route when the nasal chambers are abnormally narrow. Bryan quoted Furet's conclusions before this Association last year. Quodi¹⁷ points out that in some cases the sphenoidal sinus bulges downward and outward as a "maxillary recess," so that there is between it and the maxillary sinus a thin common wall; in such a case the sphenoid would be easily accessible through the maxillary sinus. I have a specimen in which this anatomical peculiarity is presented and this extension of the sphenoid down and out could be reached and drained only through the maxillary sinus. Usually it is not difficult to perforate intranasally the anterior wall of the sphenoidal sinus, but it is often impossible to reach every part with the curette or to secure drainage from near the lowest point. Where the probe reveals unusual extension of the sinus outward and downward operation by way of the maxillary sinus appears to be indicated. However, the method of approach through the maxillary sinus presents difficulties of a serious nature and we should certainly not be justified in using this route when the maxillary sinus is uninvolved, unless previous intranasal procedures had failed of success. I have not opened the sphenoidal sinus by way of the maxillary sinus in the living subject and I have no opinion to express of the therapeutic efficiency of this procedure.

The chief difficulty that I have found after the ordinary intranasal operation upon the anterior wall of the sphenoid has been the tendency of the opening to close again to such a degree that the discharges from the conformation of the cavity are easily poekilid. The lower portion of the anterior wall and the floor of the sinus are usually quite thick and dense and the sharp spoon

makes but little impression upon them. I have endeavored in one case to secure an opening that would assure continued free drainage by the following method. I first amputated under cocaine the middle turbinate and locating the sphenoidal foramen I broke down so far as I was able the anterior wall with the sharp spoon. A few days later under general anesthesia with burrs driven by an electric motor I endeavored to drill away the lower portion of the anterior wall and part of the floor of the sinus so that a grooved depression should extend to and include the upper curve of the posterior naris. This secures drainage from the most dependent part of the cavity that is accessible. The burrs should be from one-eighth to three-sixteenths of an inch in diameter and so made as to cut in the direction of their axis almost as well as laterally. Smaller sizes might be dangerous from too great power of penetration. The shaft should be two and one-half inches clear above the chuck of the cable. With a good illumination and the finger in the posterior naris I found the procedure practicable, but in my first attempt I was not bold nor persistent enough, and I did not secure quite the drainage channel I had anticipated. The opening in the anterior wall of the sinus remained large and patulous, however. I suggest this method of operating as one that will be found serviceable in suitable cases. Possibly from the freer drainage thus secured it may be followed by a more complete cessation of discharge from the sinus than we actually obtain.

The possibility in operation upon the sphenoidal sinus of penetrating the cranial cavity with injury to its contents has from the first been appreciated and indeed has possibly interfered with the development of this operation. Nevertheless recorded deaths directly or possibly due to operative interference are much fewer than the deaths recorded from meningitis due to untreated sphenoidal abscess; and when we surmise how many deaths from meningitis consequent to this disease may have occurred whose cause was unrecognized it is evident that the dangers of operation are much less than the dangers of a neglected sphenoidal empyema. Bryan⁸ last year quoted Toubert's¹⁹ report of twenty-four cases of meningitis due to sphenoidal disease and several additional cases have been reported since that time. Attention has been repeatedly called to the relative thickness of the posterior wall and floor of the sinus and that amputations may be carried on with reasonable safety within the sinus if care be taken to avoid rough treatment

of the roof and external wall. I cannot agree with Roughton's¹⁸ opinion that "the passage of a sharp pointed instrument through the anterior wall of the sphenoidal sinus is attended with such risk of infecting the interior of the skull that it should never be done."

An accident that may happen in this operation to which I find little allusion is a serious immediate or secondary hemorrhage. In close relation with the external wall of the sinus lie the internal carotid artery and the cavernous sinus. The sphenopalatine twig of the internal maxillary artery passes through the sphenopalatine foramen just to the outer side of the anterior wall of the sinus and sends a branch—the septal artery—across the face of the sphenoid to supply the mucous membrane of the septum. This branch of the internal maxillary is the one most likely to be injured during an operation performed with due caution. I have had a severe secondary hemorrhage occur ten days after a free opening into the anterior wall of each sphenoidal sinus. In the interval both sphenoidal sinuses had been irrigated daily. Six days after the operation dull frontal headache began there, having been no headache previously, and the patient complained of a painful sensation high up and back in the left nasal chamber. On the ninth day I syringed both sphenoidal sinuses with a solution of hydrogen dioxide. When I syringed the left cavity the patient immediately complained of severe pain. This was followed by sneezing and then a very severe and protracted hemorrhage that required a post-nasal and intranasal tamponade. About midnight of the second day I was called to my patient and found him almost exsanguinated from a prodigious hemorrhage through the dressings. I repacked the cavity as before, but oozing did not cease until the fourth day. I removed the tampon little by little, all being removed by the seventh day from the beginning of the hemorrhage. From the little that I could see during the hemorrhage the blood appeared to pour out from the external side of the upper back part of the left nasal chamber. I think that the sphenopalatine artery was wounded in my operation. The wound was protected by a clot which was dissolved by the dioxide of hydrogen. My patient, a man of intelligence, stated that the bleeding came from the point that had been painful for a few days and that it relieved that sensation permanently.

Geitzman in 1895 reported to this Association a secondary hemorrhage occurring on the seventh day after the opening of the sphenoid. In his case also there was a recurrence of hemorrhage

requiring another tamponade on the second day. C. J. Jackson, in 1891, presented to the Pathological Society of London a specimen taken from a boy aged thirteen years. There was a small myxomatous polyp in a large sphenoidal sinus. Two or three months previously the boy received a fracture of the frontal bone which was followed by frequent attacks of epistaxis, during one of which he died. The sphenoidal sinus was full of clotted blood and there was a direct communication with the left carotid artery, probably caused at the time of the accident. Dr. J. N. Hepburn reported at the 1901 meeting of the American Laryngological, Rhinological and Otological Society a hemorrhage which he had witnessed during an operation on the sphenoidal sinus "in which the cavernous sinus had been accidentally opened." A startling hemorrhage followed which was controlled by packing. That severe and persistent hemorrhage following this operation has not been reported more frequently indicates that the accident, while its possibility is to be recognized and prepared for, is not of frequent occurrence.

The results of my operations for chronic empyema of the sphenoidal sinus usually have been satisfactory. The more distressing symptoms have been relieved. A number of my cases which I have recorded as cured continue to have more or less annoying mucous or muco-purulent discharges into the nasopharynx. In the more obstinate of my cases there has been a marked tendency for the opening in the anterior wall to contract until little more access to the sinus or drainage of its contents is secured than before operation.

I incline to the belief that if I am able to carry out completely my method of operating that I have outlined in this paper I shall secure such good and permanent drainage that more complete relief from these annoying discharges may be secured.

RESULTS OF OPERATIONS.

	Operated	Cured	Improved	Unimproved	Died	Unoperated
Unilateral Chronic Sphenoidal Empyema	11	6	5	1
Double Chronic Sphenoidal Empyema	4	2	2	2
Malignant Tumors	2	1	1

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SCARLATINAL PERFORATIONS OF THE PILLARS OF THE FAUCES*

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The particular subject to be considered is that kind of scarlatinal sore throat, usually designated streptococcal angina, characterized by superficial or deep tissue destruction or even circumscribed gangrene. The expression, coagulation necrosis, applicable to all pseudo-membranous processes, implies a more or less superficial septic thrombosis involving all blood channels. In deep penetrating ulcerations or circumscribed gangrene there is septic thrombosis of the larger veins primarily, in fact the depth of the slough is determined by the penetration of septic coagulation in the veins of part. This conception of the deep coagulation necrosis characteristic of scarlatinal angina is important. The fulminating pyaemia which occasionally is met with in this disease is really progressing septic phlebitis involving the large venous trunks.

In the study of this disease process, as manifested in that part of the throat structure known as the faucal pillars, there are certain features to which attention should be drawn. The tonsils, lodged between the anterior and posterior pillars, are usually first invaded. The germs causing coagulation necrosis readily permeate the whole substance of the tonsil and numerous foci of destruction form. Goodale (1) has found deep streptococcal abscesses in tonsils excised during the acute inflammatory stage in severe tonsillitis. Thus it is clear that the faucal pillars invaded on their free surfaces by the superficial coagulation necrosis are likewise menaced by a destructive process from the tonsillar surface, the crypts of the tonsils serving to concentrate and render more virulent the septic germs. Usually, however, the capsule of the tonsil resists destruction and only a small foci within the tonsil break down. But in some cases we have in scarlatinal angina a condition of more severe peritonsillitis with invasion of the sub-tonsillar tissues.

F. C. Cobb (2) has called attention to the pharyngo-maxillary space as the seat of the suppurative process in deep peritonsillar

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abscess, and in cases which I have observed and in which perforation of the faucal pillars has occurred, it has seemed that the focus of most active destruction was in this subtonsillar space. This deep focus of coagulation necrosis destroys in all directions, and particularly toward the points of least resistance, the anterior and posterior faucial pillars. It is not as in ordinary peritonsillar abscess a localized pus forming process, but actual necrosis. The fact that in the cases observed it was possible to pass a probe through the anterior pillar into or beneath the tonsil and then out through the posterior pillar points conclusively to a central tonsillar or subtonsillar focus of destruction. Further it may be observed that the perforations occurred at or near the point of election for opening deep peritonsillar abscesses thus indicating that the pharyngo-maxillary space was the center of active destruction.

The question as to the permanence of such perforations is also important. It depends chiefly upon the amount of destruction of the pillars and the amount of tonsillar tissue that is left. Usually they cicatrize, leaving a blind pouch, but I have seen such perforations remain as a slit exactly like the congenital malformations recorded.

In the study of throat ulcerations as evidenced by the presence of perforations or blind pouches and scar tissue the so-called congenital malformations must be taken into account. Bosworth (3) mentions the cases recorded by Wolters, Chiari, Schrapinger and others. The description of some of these corresponds closely with the post-scarlatinal cases. Watson refers to a case in which there was a blind pouch leading downward from pillar indicating a defective closure of the post mandibular visceral cleft. Broeckbert (4) collected two cases recorded by Garel of congenital perforations of the anterior pillars, and he adds two more observed by himself; 1, Symmetrical congenital perforation of both anterior pillars in a boy of eleven; 2, Perforation 10x2 millimeters in left anterior pillar.

W. Williams (5) showed before the Laryngological Society of London a drawing of a "Congenital Fenestration of the Faucial Pillars." In the same volume, Waggett (5) exhibited a case of "Probable Congenital Fenestration of the Anterior Pillars of the Fauces," the same being in a woman of 43 having a history of scarlet fever, but no knowledge of ulceration. In the discussion by Beale, Donelan and Powell the concensus of opinion was in

favor of such perforations having resulted from an ulcerative process, probably scarlatinal, as there was cicatricial border.

A case exhibited by Davis (6) of a peculiar palatal malformation consisting of a webbing resembling and accessory palato-pharyngeus, was supposed to be congenital. In the discussion de Haviland Hall, Powell, F. Semon, Williams, C. Beale, H. Tilley, Baber, D. Grant considered it the result of an ulcerative process, probably scarlatinal.

F. Semon (7) showed a patient, a girl of eleven, having congenital Symmetrical Gaps in both Anterior Pillars of the Fauces with Absence of the Tonsils. The slits extended almost the whole length of the pillars. There was no scarring nor history of ulceration. Semon stated that he had found in literature about twenty cases of such anomaly in three of which the tonsils were absent. Chiari had suggested that such a condition represent the persistence of the bronchial clefts. It was remarked by St. Clair Thompson that until such conditions were detected in early infancy they could scarcely be called congenital with a certainty.

F. K. Monro (8) describes a case of "Membranous Sore Throat with Perforation of the Faucial Pillars resulting from Pneumococcus Infection." In this case there was complete perforation through both anterior and posterior pillars. The patient had albuminuria and also slight paretic symptoms, but no Klebs-Loeffler bacilli were found.

Newcomb (9) refers to the difficulty in determining positively the question of congenital origin of palatal anomalies. Symmetrical lesions and absence of cicatricial tissue supports but does not prove that the lesion is congenital. The author narrates one case of supposed congenital oval perforations in both anterior pillars. The location of the perforations with reference to the tonsils suggests a probability of origin similar to the process described in my cases. He further quotes Fowler who maintains that in all such cases a history of previous scarlatinal angina or peritonsillar abscess can be elicited and that scar tissue can be found if carefully searched for.

In this article (Newcomb's) the probability of such lesions being either congenital defects or the result of acute non-specific ulceration is fairly presented. At the same time it seems to me that we should go even further, and assume that such conditions are the result of an acute ulcerative process unless positively disproven. The importance of scar tissue is over-estimated. Where the le-

sion occurs in an infant scar tissue may be entirely wanting when seen in adulthood. Or, in case of perforation of permanent character the puckering from the tonsillar surface may draw in the cicatricial margin leaving only normal mucous membrane visible surrounding the perforation.

The current literature on this question presents a rather striking contrast to the standard authorities. It restores one's confidence in mankind to find so many causes for evidences of throat ulcerations other than syphilis. There is one point to which attention should be particularly directed. The location of a blind pouch or perforation is an indication of the cause. If it be situated in close proximity to the tonsil or near the pharyngo-maxillary space the probability is greatly in favor of there having been a deep tonsillar abscess or necrotic process, and I believe that such phases of scarlatinal anginas are frequently overlooked.

CASES.—In a girl of four the cardinal symptoms of scarlatina were obscured by the violent angina. She had had one or more doses of antitoxin and had been treated for diphtheria when I saw her during the third week of sickness. At that time there was pronounced septico-pyæmia with a daily almost constant temperature of 103 degrees to 104 degrees. Food was refused because of dysphagia. She had been in this condition for many days and was becoming drowsy and apathetic. The odor from throat, nose and left ear permeated the room. My first impression was that the patient was in a late stage of typhoid fever, with throat and ear abscesses, scarlet fever not being suspected. The history of the case and subsequent development of scarlet fever in a sister and brother determined the diagnosis. The left faucial pillar was covered with a false membrane on the removal of which a deep pocket was discovered penetrating to the subtonsillar region at its upper part. When first seen this perforation was about the size of a lead pencil. In the right anterior pillar was a smaller perforation and in the posterior pillar on the same side a similar one. In fact a swab could be passed through to the post-pharyngeal wall. There was probably a considerable degree of coagulation necrosis in the naso-pharynx, and superficial sloughing. From the left ear there was a stinking sanious discharge and inspection showed a large plaque of necrosed bone, in the superior meatus. Mastoid not specially involved. In the right ear, there was a subacute suppurative process. (It has been remarked, and indeed we know from clinical experience, that it is quite the rule to have both ears

simultaneously involved in scarlatina. In addition to direct infection of Eustachian tube and lymphatics, there is the almost constant factor of dysphagia in all cases of throat abscesses, causing regurgitation into the naso-pharynx and thus forcing septic fluids into the tube and middle ear.) The depth of the slough in the left tonsil was of course exaggerated by the general swelling of the parts, but as the pocket was gradually cleared of necrotic debris in the course of a few days' treatment, it seemed that it penetrated to the base of tonsil and as deep as the large blood vessels. In fact hemorrhage was feared. The more superficial region continued sloughing for some time, a week or more, until nearly all of the tonsil had disappeared and with it the anterior pillar. The perforation on the right became clean-cut in both anterior and posterior pillars, but as the peritonsillar swelling subsided and the tissues resumed their normal relations cicatrization progressed until there was left only a blind pouch with an area of cicatricial tissue around it. The general edema of the pharynx persisted for a week or more involving the larynx, pronounced dyspnea for a day or more adding to the patient's distress.

The treatment may be briefly referred to, to emphasize the obstinacy and progressive character of this type of ulceration. The hygienic conditions were improved by removal from a dark bedroom with unsanitary closet adjoining, to a bright sunny room. The child was given very little by the mouth as dysphagia caused increase of ear trouble and added the danger of bronchitis from food aspiration. She was kept alive for more than a week by rectal enemata of beef peptonoids, eggs and pancreatinized milk. The local treatment of the throat and ears was thorough: Dobell's solution sprayed into nares every two hours; ulcers were cleaned out by hydrogen-dioxide (diluted) on swab every six hours and then filled with a powder of bismuth, orthoform and starch, equal parts. The ear was syringed every three hours with bichloride of mercury on to 3,000, and twice daily, after cleansing, hydrochloric acid, 2 per cent, was dropped into the canal and allowed to remain ten or fifteen minutes. This gradually dissolved the carious bone and the odor lessened. With all this the patient's condition at the end of a week gave encouragement only in the fact that she was alive, had less fever, less odor, and still tolerated rectal enemata.

After ten days she was able to swallow, and at the beginning of the second week of treatment the healing of the ulcers was satisfactory. The carious bone was dissolved out and the loosened

malleus was afterwards removed by the curette. The right ear discharged a short time but eventually healed with a normal hearing.

On the left there is fair hearing, now eighteen months after sickness, but this will probably lessen as there is a purulent discharge at intervals, and complete cicatrization will reduce the direct sound perception through the foramen rotundum.

The second case, a child of two years, is similar but not of so severe a type. The ulceration and ear suppuration were on both sides. Perforation of pillars had not been diagnosed and I was called on account of the ear trouble. The patient had moderate degree of fever and emaciation was extreme. During the first week of treatment swallowing was impossible and nutrition was maintained with enemata. As in the previous case the sloughing steadily progressed for a week until there was a clean-cut perforation of the anterior pillar leading into a pocket deep in the sub-tonsillar region and thence through the posterior pillar.

The blind cicatricial pocket in the anterior pillar is located identically with the one in the other case directly over the pharyngomaxillary space, and hence I infer that this was the center of active tissue destruction. Both ears were involved, but there was no tissue destruction, and this patient recovered with normal hearing.

In one other case, seen many years after scarlatina, I found such a perforation as has been described which by reason of its being nearer the free edge, and there being no tonsil left to cement the edges together, it has remained permanent.

It might readily pass for a congenital anomaly, as described by observers, as there is no cicatricial tissue to be seen. Persistent inquiry revealed a history of scarlatina with very sore throat and from the description a probable ulceration. Prior to my experience in the other cases I recorded this one as a congenital defect, but having observed the others I now believe that it was due to scarlatinal ulceration, and also that the process destroyed the tonsil, thus accounting for the permanence of the perforation.

CONCLUSIONS.

Special text-books and syphilographers do not give proper credit or rather discredit to scarlatinal angina as a cause of defects and cicatrices in the faucial pillars.

A deep focus of streptococcal infection, tonsillar or subtonsillar, causing necrosis of all contiguous tissue rather than pus accumulation as in ordinary peritonsillitis, is the cause of perforation of an-

terior and posterior faucial pillars. The pharyngo-maxillary space is the probable location of this focus of necrosis.

Scarlatinal ulceration is usually bilateral, and being often very insidious and marked by other severe systemic symptoms, the lesion is very frequently overlooked.

The treatment of scarlatinal angina must be conducted with extreme surgical thoroughness and patient persistence. Bilateral destructive otitis is a common complication of scarlatinal angina, since the dysphagia caused by throat infiltration allows regurgitation of fluids and infecting material into the naso-pharyngeal space and only by prompt healing of the throat can the hearing be saved.

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A CASE OF INCISED WOUND OF THE LARYNX.*

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External wounds of the larynx usually come under the care of the general surgeon, and for this reason have interest for him rather than for the laryngologist. Occasionally, however, the laryngologist may be called upon for suggestions, either because of complications, or of the severity of the symptoms, or because the case may present so gruesome and desperate an appearance, that for a time the simple indications for treatment are overlooked. The following case, the history of which is copied from the records of the Springfield Hospital, has some points of interest.

E. M., male, single, 38 years of age, carpenter, resident of Monson, Mass., admitted to the hospital July 17, 1901. Always well until two years ago, when he became despondent and cut his throat with a razor. Was taken to the Worcester Hospital and recovered. For two weeks preceding his admission to the Springfield Hospital, he was not in good health, and had been out of work. He was nervous and depressed, and could not sleep on account of gastric distress. On the 13th of July, 1901, while extremely despondent, he slashed his throat with a razor for the second time, and inflicted other mutilations. These wounds were closed with sutures, the patient rallied from the shock and was brought to the Springfield Hospital on July 17, 1901, as above indicated.

Physical examination of the patient disclosed no lesion except the external wounds. Extending transversely across the throat, just above the thyroid cartilage, between it and the hyoid bone, was a single incision running well around to the left side of the neck. The sutures which were placed had sloughed out, and the laryngo-pharynx was laid open to the posterior wall. The epiglottis was divided transversely at its base, the upper segment remaining adherent to the base of the tongue. On attempted phonation the vocal cords and arytenoids could easily be seen through the wound. The patient was unable to take any nourishment by the mouth, as food entered the larynx and also escaped through the opening, and phonation was so interfered with that he could not be understood only with difficulty. The house officer was unable to pass a stomach tube, so the patient was sustained by nourishing enemata. His strength failed rapidly, and on July 28th, through the courtesy of Dr. W. H. Pomeroy, surgeon to the hospital, I saw the case in consultation. Immediate closure of the wound was advised and this was done by Dr. Pomeroy under cocaine anesthesia. Supra-renal extract was applied to the granulating surfaces which were then freshened. A line of buried sutures was placed near the mucous surface, bringing the divided segments of the epiglottis into good apposition, and the external wound was closed with sutures closely placed. The voice was restored, and after three days soft food could be swallowed without difficulty or pain. The wound healed promptly and the patient was transferred to the State Hospital for Insane at Northampton.

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ABDUCTOR PARALYSIS OF THE LARYNX.*

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In presenting the subject of Abductor Paralysis again for your consideration and keeping in mind the paper read before you in 1900 by Dr. Norton L. Wilson (1) I may premise by apologizing that I have nothing new to add with regard to etiology or treatment. Only two cases have presented themselves to me thus far, but as one of these has been under observation for over four years, and exhibits some doubtful points in diagnosis, as well as other points of interest, I may be pardoned for bringing the subject under your attention.

Both of my cases have been males. The first presented himself on the 28th of May, 1896, at St. Michael's Hospital, suffering from marked dyspnoea. At the age of 18 the patient had suffered from a slight attack of gonorrhoea, and from what may have been a chancre. There is an indefinite history of the appearance of four gummata, one on the left temple, but there was no appearance of swelling of the glands, or of a rash upon the skin at any time. It would seem that a diagnosis of syphilis had been made at the time, as the patient states that he was treated for nine months with blue pill, and sarsaparilla. From that time on he appears to have been thoroughly healthy, and well. At the age of 26 he married, and became the father of four children, all of whom have been healthy from birth.

Two years ago, that is to say, thirty-seven years after the chancre, the present disease manifested itself. For the first twelve months all that was noticed was a numbness along the outside of, and in the heel of the left foot. Eight months ago, he noticed a numbness in the tongue, similar to that of the feet. This numbness spread to the left side of the nose and cheek and most of the left side of the face. Three months later, hoarseness developed, gradually increasing, while the voice became noticeably weaker.

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Two months ago swallowing became difficult for the first time, and this was accompanied by a tendency towards the regurgitation of fluids through the nose. Respiration also became noisy, and somewhat difficult, especially on exertion. During the past six years there has been a loss of weight, amounting to 35 pounds, and night sweats have not been uncommon. At the present time he has a sensation of walking on wool, equally in both feet. The legs are also numb, and the patient has great difficulty in keeping his feet and legs warm. The left side of his face, the lips and the chin, and the tongue are numb, and he does not use the left side of his mouth in chewing his food. Swallowing is performed without any pain or difficulty. The respiration is very noisy, the chief difficulty lying with the inspiratory movements. The noise becomes worse when the patient is sleeping, which he does very soundly, and in the prone position. The character of the breathing at night is best described by the statement, that the only person upon the flat upon which he is quartered, who has been able to sleep since he was admitted, is the patient himself.

Prior to his entrance into this hospital, the man had been under charge of Dr. McDonogh, in the General Hospital for a month, and an operation advised, but refused.

I am indebted to my colleague, Prof. Anderson, for the following account of the patient's general condition.

"The following notes on the patient's general condition were made on June 4th, 1898, a few days after tracheotomy by Dr. Wishart.

The patient is a man of good physique, but rather emaciated, weighing 135 pounds, has a nervous, rather anxious expression.

Heart and circulatory system are normal, pulse, 84.

Chest is well formed, though there is slightly increased depression in the supra-clavicular, and supra-sternal fossae. Physical examination discovers nothing abnormal, chest movements free and easy, respirations 24.

Alimentary system; no difficulty in swallowing at present, though a short time previously food had regurgitated through the nose. Digestion is good and the bowels are regular.

Genito-urinary system; patient has had incontinence of urine which dribbles away from him without his being able to feel it passing through the urethra. Examination of the urine reveals nothing abnormal, no albumen and no casts. There is less of sexual power.

Nervous system; there is marked loss of sensation on the left side

of the face from the forehead to the chin, also on the left side of the lips and tongue. The left temporal and masseter muscles show great atrophy; he has little power to bite with the left side of the jaw; cannot whistle from inability to approximate the lips; the tongue is protruded straight and shows no atrophy. Sternomastoids are normal.

Hearing is not impaired.

Sight is good, though the eyes tire readily. Patient has diplopia; pupils are of medium size and equal, they react sluggishly to both light and accommodation, there is no loss of power in any of the ocular muscles.

Patient complains of a feeling of constriction about the lower part of the abdomen, also severe darting pains through the lower extremities. Has a peculiar feeling in the feet, as if walking on springy rubber, and he also complains of coldness in the lower extremities, and tires readily on walking. There is no evidence of atrophy. The shooting pains are not constant, and are worse at night. Ordinary sensation is lessened in both the feet and lower half of the legs, in front and behind. Muscular sense is good. Patient says he has to steady himself to prevent falling when washing his face. On standing with the feet together and the eyes closed, he sways very much from side to side, but does not fall. There is considerable inco-ordination of the lower extremities in walking, the feet being thrown out and brought down with more force than normally. He has much difficulty in attempting to walk in a straight line

The knee jerk is lost on both sides completely, even after reinforcement.

There is no tremor of the lips, facial muscles or hands, and no inco-ordination in the upper extremities, or evidence of other trouble."

The examination of the larynx showed the vocal cords lying almost in apposition, or in what may be styled the position of phonation. In expiration, they appeared to be pushed apart, chiefly through a yielding of the right cord by the force of the breath, while in inspiration, they sagged somewhat, and came closer together. There was no lesion of the larynx, and the color was normal, sensation being somewhat diminished. The voice was hoarse and coarse, speech being free so long as the air in the lungs held out, when the patient paused and made a forced inspiration accompanied by a marked elevation of the shoulders. This exertion was

painless, but fatiguing. The facial expression indicated considerable anxiety.

Immediate operation was decided upon, and tracheotomy performed two days later, considerable difficulty being experienced with the anesthetic, owing to the inspiratory effort. The incision was made below the isthmus of the thyroid. A tube has been worn constantly ever since, (over four years), to the entire relief of the patient, who has had, however, several uncomfortable experiences owing to the tube having accidentally slipped out, the sinus showing at the same time a marked tendency to contract.

Co-incident with the operation, the patient was put upon strychnia and arsenic, and a mixture of iodide of potash and mercury. Three weeks later the latter mixture was reduced, owing to symptoms of salivation. The patient was kept in the hospital for over four months, during which time he gained considerably in weight and in appearance, but complained of an increasing sensation of loss of power in the lower jaw. When he was discharged from the hospital, he weighed 140 pounds.

Examination made May 31st, 1902, by Prof. Anderson.

"Sensation on the left side of the face is practically normal. The atrophy of the left temporal and masseter muscles is much less marked, and the patient can bite well with the left side of the jaw. The ocular movements are perfect; no reduction of the visual field; left pupil is slightly larger than the right; both pupils react to light and accommodation, but still, sluggishly; no nystagmus.

Tongue is protruded straight, and there is no atrophy of its muscles. Shooting pains are much less marked in the lower extremities. Numbness of feet continues, though inco-ordination of the lower extremities is much less marked. Patient still sways considerably on standing with the eyes closed; but less than when last examined; knee jerks still completely absent; no muscular atrophy.

The incontinence of urine continues, though the patient says he can now feel the urine passing through the urethra. Bowels are normal. Weight 176 pounds."

At the end of last week, I was fortunate enough to be able to make another examination of the larynx of my patient. Speech was as clear, if not clearer, than before, although he fancied that at times his voice was somewhat thicker, and enunciation not so clear. The vocal cords are not lying in apposition, but are separated about one-eighth of an inch throughout their entire length, coming together in phonation. In inspiration there is a distinct sagging of

the cords toward each other, and no perceptible movement of abduction could be made out. The position of the cords is not cadaveric, but perhaps points to a weakening of the power of adduction. When the finger was placed over the mouth of the tracheotomy tube, patient stated that he breathed with more ease than formerly.

Diagnosis: *Tabes dorsalis* with bilateral involvement of the bulbar nuclei of the spinal accessory and unilateral involvement of the facial, trigeminal, and slightly of the oculo-motor nerves.

While some of the classical symptoms of locomotor ataxia, as the Argyll-Robertson pupil are absent, and while the improvement in the patient's condition to so considerable an extent is unusual, still the absent knee jerks, Romberg's sign, the lightening pains, the altered sensations in the feet, slight inco-ordination, and the bladder symptoms, occurring in a patient with a previous history of syphilis, are sufficient to justify this opinion.

My second case presented itself two months ago in a male, aged 60, supposedly suffering from oesophageal obstructive disease. The cords were in a similar condition to that described above. The patient disappeared without permitting further observation.

In his last edition, McBride (2), after restating Semon's well known law "that paresis confined to the abductors is commonly, if not always due to organic changes in the pneumogastric or recurrent trunk, or in the medulla," goes on to say that having had access to the manuscript of a work now in preparation by this painstaking investigator, he feels inclined to doubt whether any incontestable evidence can be brought forward as to the existence of laryngeal paralysis due to organic changes affecting the nervous system, and confined to the abductors alone. I am not aware that the work above referred to has issued from the press, at any rate I have not had access to it, but I believe we are safe in assuming that the conclusions above quoted are correct and represent the sum of the opinions of the leading investigators of the day. While it is true that the statement of this law has met with great opposition from such observers as Herr Grossman (3), the conclusions above referred to would seem to be still soundly enough established.

It is not in my power to show anything in connection with my cases that will throw any light upon the rights of the spasm theory of Krause, or upon that of Semon as stated above. Perhaps, however, if I can manage at some future date to obtain a post-mortem examination upon this case, and to observe its progress from time

to time, up to that date, something may be brought to light that will be of service. So far, as we have gone, however, we have certainly here a primary purely abductor paralysis, which continued stationary (laryngeally speaking), for over three years, thus seemingly confirming the statement that any lesion which affects the motor fibres of the larynx tends to involve the abductor fibres first. On the other hand, the conjoined disorders of the other nerve centres point strongly to a bulbar origin for this paralysis.

The following opinions would tend to favor the view that the causal condition in this case is *tabes*; McBride (2) after enumerating some twelve different conditions, in which double abductor paralysis may arise, goes on to say that when it is met with as a comparatively stationary condition, locomotor ataxia or the cerebro-spinal affections are the probable cause; Lennox Brown (4) considers that "it is essentially the product of *tabes*," but when "it is due to disseminated sclerosis, or progressive atrophy, there is a tendency towards complete re-current paralysis." The tendency here mentioned has not been present in my case so far, the cadaveric position not having been assumed by the cords. On the other hand, Bosworth (5) seems to consider that the blood poison in syphilis is productive of a local ankylosis of the crico-arytenoid joint with fixation of the cords in the midline. The history in this case points undoubtedly to syphilis, but I cannot look upon the crico-arytenoid joint as to blame for the position of the cords. Again, we are informed by Lennox Brown that where bilateral paralysis arises from a central, or peripheral cause the commoner condition is one of incomplete abduction of one cord, and of complete abduction of the other. Repeated observations have failed to bring this out in my own case, unless the more marked yielding of the right cord in expiration, referred to above, is evidence.

In discussing the operative treatment of this case, in my opinion there is very little to be said in favor of either intubation or excision of the vocal cords. The former can surely only be a temporal measure at best, used to avert the sudden death, which has occurred in some of these cases, and manifestly intubation in my first case would soon have required to be followed by tracheotomy. The operation of excision of the vocal cords, depriving the patient as it does of all power of speech, and condemning a man to eternal silence, is surely not to be weighed in the balance with the trifling discomfort of the constant wearing of a tracheotomy tube. The external part of the tube can easily be concealed, especially if the

low operation is done, and the size of the tube selected should always be small enough to allow of the free passage of air along its sides through the larynx itself.

Resection of the recurrent nerves, as advised by Geronzi (6) may be justified if the causal disease is steadily progressive, as by this means the so-called cadaveric position of the cords will be attained and respiration made safe and easy, but the surgeon must necessarily hesitate to make use of this operation where there is any prospect at all of recovery.

In this instance, the Semon's (7) indication for early tracheotomy, namely, "when the objective widening of the glottis cannot be attained by treatment within a short time" was certainly present.

With regard to the medication, as both iodide of potassium and arsenic were used, it is impossible to determine to which credit is due, but it is well to remember that Gower states emphatically that anti-syphilitic remedies are absolutely useless in the treatment of tabes.

The Faradic current advised by Newton was not employed.

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THE EFFECT OF CLIMATE ON LARYNGEAL TUBERCULOSIS WITH SPECIAL REFERENCE TO HIGH ALTITUDES.

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The climatic treatment of tuberculosis always has been and still is, a subject of much interest as well as discussion. It must be admitted that no definite conclusions have as yet been arrived at, and that the advocates of the home treatment, the sanatorium treatment, the treatment by removal to high altitudes or to sea level, have presented many convincing arguments in favor of each.

Comparatively few writers have devoted their attention to the climatic treatment of laryngeal tuberculosis. The most notable articles are those of Solly,¹ Philip Schech,² Clinton Wagner³ and Derscheid.⁴ In speaking of the treatment of this affection many men incidentally make short references to change of climate. Among these we may specially mention Ingals.⁵ Those who have considered the subject but scantily are almost unanimous in hastily condemning high altitudes, while those who have given the subject more thought, corroborating their opinion by careful personal investigation, find high altitudes not deleterious to say the least, but even beneficial. Many good observers have been prejudiced by former writers, by superficial investigators, and have never allowed themselves to alter an impression based upon erroneous opinion.

With a view of throwing some light upon this important subject I began a careful analysis of a series of 205 cases, full records of which have been carefully taken and preserved. My purpose was not to laud Colorado as a Mecca for laryngeal tuberculosis, nor did a preconceived optimism prejudice my conclusions. In fact, I did not know when beginning this paper where the analysis would land me. It is true the general impression which has prevailed in my mind as a result of observing and treating many cases, has

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been one less pessimistic than is usually expressed by those in other localities.

After careful study of my records, I find so many questions requiring accurate decision, so many modifying conditions demanding recognition, that I am obliged in the present paper to confine myself to generalities rather than to details. This paper, therefore, partakes largely of the nature of a preliminary note, for which I ask your indulgence.

One naturally asks what peculiarities in climate are demanded for the treatment of tuberculosis of the upper air passages. It is a well recognized fact that altitude alone is comparatively of little importance. There are other climatic influences which need to be taken into account. Primarily among these are temperature, sunshine, humidity, dryness, pure air, irritating air, dust-laden air, etc. All of these are important, but it seems to me that the one great desideratum here, as in the treatment of phthisis generally, is pure air. Weber says: "The most important point of all good climates for phthisis is purity of air. This is to be found, (1) in elevated regions, (2) in the desert, and (3) on the sea." Unquestionably the other points must play a part in various forms of the disease and therefore, one cannot disregard the injurious effect of an excessive local irritation upon highly inflamed mucous surfaces. But dry air is not necessarily dust-laden air, while, according to Solly, it improves relaxed catarrhal conditions. The general pathological picture of laryngeal tuberculosis is one of depressed vitality, relaxation and anemia, not inflammatory in nature. This latter condition may incidentally supervene and is especially seen in acute cases which assume the rapidly progressing miliary type. These with their high temperature and great activity, present all the conditions for which high altitudes, with their dry air, are contra-indicated.⁶

Classifying the 205 cases in a manner best suited for the purposes of this report, it is found that certain cases developed pulmonary and laryngeal lesions before coming to Colorado, in climates widely different, others developed lung and throat lesions in Colorado or similar regions, others developed throat lesions in Colorado or similar climates, while the pulmonary trouble began elsewhere. Again certain cases presented no determiner lung affection whatever, being primary laryngeal cases and of these, very few in number, one originated in Colorado, the remainder having been

contracted elsewhere. The following is an accurate record of this classification:

1. Cases having both lung and throat lesions. (a) Number originating in Colorado or allied climates, 11. (b) Number originating elsewhere, 152. (c) Number in which lung lesion originated elsewhere, throat lesion in Colorado, 37.

2. Cases having only throat lesions. (a) Number originating in Colorado, 1. (b) Number originating elsewhere, 4. Total, 205.

These statistics, however, give but an indefinite idea of the effect of climate upon the development of laryngeal phthisis. We know that fully 30 per cent of all cases of pulmonary tuberculosis sooner or later show signs of laryngeal involvement. I am not aware that anyone has ever attempted to determine when in the course of the disease this occurs, nor what may be the effect of climate upon its development. It is safe to say, as is generally conceded, that laryngeal manifestations may show themselves early or late, more often, however, late, of course, always having in mind the occasional though undoubted cases of primary laryngeal tuberculosis.

If it can be shown that throat lesions develop more rapidly in high altitudes than elsewhere, the opinion of some that these localities are injurious would be borne out. Let us see what my records prove. Average duration of lung lesions:

- (a) Of cases developing lung and throat lesions in Colorado.
134.8 weeks.
- (b) Of cases developing lung and throat lesions elsewhere,
110.8 weeks.
- (c) Of cases developing lung lesion elsewhere, throat lesions,
Colorado, 118.8 weeks.

Average duration of throat lesion:

- (a) Of cases developing lung and throat lesions in Colorado,
51.4 weeks.
- (b) Of cases developing lung and throat lesions elsewhere,
75.4 weeks.
- (c) Of cases developing lung lesion elsewhere, throat lesion in
Colorado, 21.1 weeks.

Average length of residence in Colorado:

Class "a".....	352.5 weeks
Class "b".....	25.8 "
Class "c".....	82 "

These figures may be compared by placing them in a table as follows:

Class	Average Duration of		Average difference in time between development of lung and throat lesion.	Average length of residence in Colorado.
	Lung Lesion.	Throat lesion.		
(a)	134.8 weeks	51.4 weeks	83.4 weeks	352.5 weeks
(b)	110.8 "	75.4 "	35.4 "	25.8 "
(c)	118.8 "	21.1 "	97.7 "	82.0 "

This table shows:

1. That in cases developing both lung and throat lesions in Colorado the throat lesion manifests itself 48 weeks later than in those originating elsewhere.

2. That in cases developing lung lesions elsewhere and throat lesions in Colorado, the throat lesion manifests itself 62.3 weeks later than in those originating elsewhere.

It would, therefore, seem that so far as the development of laryngeal tuberculosis is concerned, the effect of high altitudes is to retard it by more than one year, notwithstanding the natural tendency for the occurrence of this very common complication of pulmonary tuberculosis. So far as the direct therapeutic influence of high altitudes is concerned, the results indicated in a previous paper⁷ may be referred to.

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SOCIETY PROCEEDINGS.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY—EIGHTH ANNUAL MEETING.

(Proceedings continued from page 698.)

THIRD DAY—WEDNESDAY, JUNE 4.

Drawings of the Venous System of the Neck.

Dr. Edward B. Dench, of New York, exhibited two drawings, showing the anatomical relations in a subject recently dissected, of the right and left internal jugular veins. Upon the right side the internal jugular was of small size and gave off but one branch, the common lingual and facial trunk throughout its entire extent. Almost the entire return circulation from the head and face was carried on through the left side. The external jugular and anterior jugular were very large, as were also the lingual and facial veins. The thyroid and laryngeal branches were in like manner exceedingly well developed. Almost all of the return current from the head and face passed through the superficial and deep vessels of the left side. The drawings were of interest from the fact that the otologist is frequently called upon to excise the internal jugular vein for thrombosis of the lateral sinus. With a distribution of the vessels such as was shown in the plates exhibited, ligation upon the left side would have been attended with considerable difficulty, and would have only been efficacious had all of the collateral branches of the vein been secured. The plate was presented in order to bring to the attention of the society the very marked anomalies which might exist in the venous circulation in this region.

Specimen of Tubercular Larynx.

Dr. Thomas H. Farrell, of Utica, presented a tubercular larynx obtained post-mortem from a case that he had observed at intervals for five years. The ulceration was found to encircle the larynx with the exception of a small strip on the anterior surface of the body of the cricoid. The specimen was interesting because in spite of the long period of infection the posterior commissure was

not involved, and the appearance bore considerable resemblance to syphilis.

Outfit for Mastoid Cases.

Dr. Wendell C. Phillips, of New York, said that about two months ago, at the suggestion of Dr. J. F. McKernon of New York, an outfit had been prepared by Van Horn & Co., of New York, for use in mastoid cases. This as modified by him, was exhibited to the society. One complete outfit was kept in stock, and could be procured on telephone order or on prescription. The outfit consisted of all necessary appliances, dressings and medicines necessary for any mastoid operation.

Pus Examination in Middle Ear Suppuration.

Dr. W. C. Phillips presented this paper. He said that modern practice favored the routine bacteriological examination of all cases of suppuration of the middle ear, this examination to be made immediately after paracentesis, so as to eliminate organisms subsequently introduced from without. The micro-organisms found their way into the middle ear through the inflamed Eustachian tube. Some of the most virulent of these organisms were found in the Eustachian tube, and even as far as the antrum without any attendant morbid process. It had been demonstrated that they might even be found in the circulation without giving rise to pyaemia or septicaemia. From these facts it was evident that other factors, such as alterations in the resisting power of the patient and in the nature of the pabulum on which they live must be necessary to excite a morbid process. Several varieties were apt to be found in the same specimen, and hence it was the rule for the bacteriologist to state which organism predominated. Some of the organisms found in the pus from middle ear disease are: The micrococcus lanceolatus, the pneumo-bacillus of Friedlander, the streptococcus pyogenes, the staphylococcus pyogenes aureus, albus and citreus, the Klebs-Loeffler bacillus, the tubercle bacillus, the gonococcus, the bacillus of influenza and the diplococcus intracellularis meningitis. In the examinations he had made he had been surprised at the frequency with which the last named bacillus had been present. In one of his cases the smegma bacillus had been mistaken by the first examiner for the tubercle bacillus. Many clinicians had reported that in the cases in which the pneumococcus was present complications were very apt to arise, and while this was

true, his experience indicated that the staphylococcus, either alone or in combination, was the most virulent.

Dr. W. H. Haskin, of New York, said that in a case which he had had under observance, he had found time and again the smegma bacillus, and had been impressed with its close resemblance to the bacillus of tuberculosis. However, it was rarely if ever found singly, the tubercle bacillus was very rarely found in middle ear disease, and he believed in many of the reported cases this error had been made of confounding the smegma bacillus and the bacillus of tuberculosis.

Dr. E. B. Dench said that an early bacteriological examination in an acute case proved very helpful in making a prognosis, particularly as regards mastoid complications and infection of the lateral sinus. They had found at the New York Eye and Ear Infirmary that in cases of streptococcus infection there was very apt to be mastoid involvement. In these cases it was now their practice to make no effort to abort the mastoid inflammation except by incision of the drum. If the case did not promptly show signs of improvement the mastoid was at once opened.

Mention was made of a case in which the symptoms had developed within a few hours, and the examination showed a streptococcus inflammation. Only one ear was affected at first, and the other drum membrane appeared perfectly normal, yet within two hours the membrane of the second ear became inflamed, and streptococci were found on this side also.

Dr. M. D. Lederman, of New York, said that he had had examinations made in several cases of chronic suppuration, and the bacillus of meningitis had been found. The pathologist did not attach any special significance. Where there were symptoms pointing to inflammation of the bony structure in these cases it was well to operate early.

Dr. John M. Ingersoll asked what was the effect of the colon bacillus in these cases.

Dr. C. R. Holmes of Cincinnati, said that the importance of such examinations could not be denied, yet unless such examinations were made by experts the results would be misleading. They should be made a matter of routine.

Dr. Phillips, in closing the discussion, said that if doubtful about the advisability of doing a mastoid operation, the finding of numerous streptococci should decide in favor of immediate operation. He

had almost no personal experience with colon bacillus infection in these cases.

Case Showing Deformity after Double Mastoid Operation.

Dr. C. R. Holmes, of Cincinnati, presented a lady to show the deformity left after a very extensive double mastoid operation done five years ago.

Two Cases of Mastoiditis, One Resulting in Thrombosis of the Cavernous Sinus, the Other Complicated with Tumor of the Cerebellum Simulating Abscess.

Dr. Ewing W. Day, of Pittsburg, read this paper. The first case was that of a child of eleven years, admitted to the hospital on January 12, 1901, in septic condition. It was at once operated upon, but by the following day the temperature had risen to 104 degrees Fahrenheit. A pocket of pus was found and evacuated. On the morning of the twelfth day the right eyelid was swollen and discolored, but the ophthalmoscopic examination was negative. A diagnosis of infective thrombosis of the cavernous sinus was made. An exploratory incision into the orbital cavity failed to evacuate any pus. On the twenty-second day ulceration and sloughing of the cornea began as a result of pressure, and the temperature varied from 100 to 103 degrees and the pulse was rapid and weak. On the twenty-fifth day the lids of the other eye became similarly affected. One eyeball collapsed as a result of the sloughing, but in the other eye this was prevented. The patient slowly recovered. It was evident that the thrombus could not have been an infected one. The child had passed through measles and typhoid fever within a few months of the onset of the mastoiditis. The second case was that of a child of seven years, admitted to hospital in April, 1901. It had suffered from a chronic otorrhea, and more or less headache. There was no swelling over the mastoid, but tenderness on deep pressure. There was convergent strabismus and optic neuritis in the right eye, and the gait was slightly staggering. The mastoid was opened and found normal, and the skull was then opened over the left cerebellar lobe, expecting to find an abscess, but none was found. The patient did well, but soon became stupid and a hernia of the cerebellum occurred. The post-mortem showed softening of the frontal lobes and a tumor, the size of a hen's egg in the right lateral lobe of the cerebellum. The lower lobe was softened. The aqueduct of Sylvius and the ventricles

were greatly dilated. The microscopical examination had not been completed.

Report of an Exploratory Operation for the Relief of a Possible Cerebellar Tumor or Abscess. Recovery from Operation. Death Three Months Later. Autopsy.

Dr. T. Passmore Berens, of New York, read a paper with this title: The patient was a child of fourteen, who responded slowly though correctly to questions. Paralysis of sixth, seventh and eighth nerves, vertigo, vomiting, progressive paresis of extremities. Operation gave temporary relief, and death occurred eventually from hemorrhage into the brain. The autopsy showed a large mass involving the pons and upper half of the medulla, which was found to be a glioma.

Dr. W. C. Phillips said that he had followed the case reported by Dr. Berens, and remembered that at the time of the operation not one of the otological staff of the hospital was convinced that it was an operative case. The operation was done at the request of the neurologists, and in the manner indicated by them.

Dr. Berens said that the subsequent history showed the operation to have been justifiable because the boy was entirely relieved of his pain and greatly relieved of vomiting, probably by the drainage of the cerebrospinal fluid, and his life was prolonged, probably at least two months, by the operation.

The Pathology and Diagnosis of Otitis Media Insidiosa (i. e. Sclerosis).

Dr. Henry J. Hartz of Detroit, presented this paper: He said that the hyperplasia began within the bone, and involved especially the articulation of the stapes and the oval window. This process constitutes not only a hyperplasia, but also a hyperostoses and metaphasia, and might localize itself in any of the structures of the labyrinth and in the chain of ossicles. When confined to the labyrinth the integrity of the acoustic nerve might be affected in a purely mechanical way and induce Menieres complex of symptoms. In this sclerotic process the cartilage disappeared, becoming converted into osseous tissue, and when the tip of the cochlea was involved the patency of the Eustachian tube was threatened. In most cases the membrane of the middle ear had been found thickened as a result of hyperemia, but there were few signs that the disease was the result of middle ear suppuration. Rheumatism, gout,

syphilis and scrofula and diseases of the nasopharynx, such as adenoids and enlarged turbinates, were looked upon as predisposing causes. The duration of the process had been known to vary from three to thirty years. The diagnosis was made by the exclusion of all other forms of progressive deafness and by the functional tests. Statistics showed that about ten per cent of all middle ear diseases were examples of true sclerosis or the result of spongiöse formations. There was usually a high degree of deafness in both ears, and the process began usually between the age of twenty and thirty years. Women were more often affected, and seventeen per cent arose during the puerperium. The deafness of old age must be excluded. Most important of all was the exclusion of catarrhal and suppurative diseases of the middle ear and tube. By the determination of the lower tone limit one could say whether the sclerosis was in the sound-conducting apparatus. Dr. Hartz exhibited Prof. Bezold's continuous series of tuning forks, and demonstrated the mode of using them, microscopical sections of the labyrinth and middle ear showing spongiöse formation in the cochlea and ossicles. Some of the specimens were made by Liebmann and Katz and Bezold.

Dr. William L. Ballenger, of Chicago, said that this paper was the clearest exposition of the subject that he had heard. The cases had been divided into two broad classes, one involving the oval window, and the other in which the disease was chiefly confined to the labyrinth. To this might be added a third class, made up of a mixture of these two. A positive diagnosis was usually made only by microscopical and post-mortem study. The disease was not always slowly progressive, but sometimes proceeded by leaps and bounds. This was probably to be explained by the involvement of the region of the greatest functional activity, i. e., the region of the oval window. If the more remote parts of the bone were involved, then the deafness would be more insidious. He believed with Dr. Hartz that the functional tests of the ear were as important to the otologist as the ophthalmoscope to the ophthalmologist, and he was, therefore, pleased that this set of instruments had been exhibited.

Dr. C. R. Holmes said that the subject was comparatively new, and not very easy to master, although certainly a very important one as stated by the last speaker. The tests were time-consuming, but it would well repay the patient to liberally remunerate the specialist who would carefully make the differential diagnosis, and so save months of inappropriate and ineffective treatment.

Prognosis in Chronic Catarrh of the Throat and Ear. Some Remarks by a Would-not-be Pessimist.

Dr. Thomas J. Harris, of New York, read a paper on this subject with the object of eliciting discussion. He said that most cases of catarrh were dependent upon an underlying cause, e. g., the lymphatic diathesis, a chronic derangement of the gastrointestinal canal, the uric acid diathesis, etc. The common error was to look too intently at the local picture. He believed our progress in the treatment of chronic catarrh of the ear had been very slight as compared with advances in diagnosis. Tubal therapeutics and pneumomassage were at best too often of temporary benefit, and sometimes of decided harm. A promise to check the deafness was often all that could be given with safety. Prophylactic measures were of the greatest value, especially the early removal of the ever-present adenoids.

Dr. Wendell C. Phillips said that he believed the author of this paper had made these pessimistic statements only to arouse opposition and excite discussion. We were all conscious of failure in certain cases. He did not think it was possible, for example, to convince any member of this society that it is desirable to abandon the use of the Eustachian catheter, even though aurists of high reputation, having lost interest in their work, had stated their belief that this instrument was almost useless. He was very glad to have the opportunity to champion the use of the catheter when intelligently applied.

Dr. C. R. Holmes said he believed in the use of the aural catheter. It was well not to promise too much in these cases. All that he would say to his patients was that he hoped to be able to secure to them as good hearing as they possessed when in their best physical condition. He was decidedly opposed to the removal of nasal spurs unless they were distinctly responsible for some pathological condition. In some cases a Turbinectomy would make the subsequent use of the aural catheter unnecessary. Much depended upon habits of life.

Dr. T. Passmore Berens said that the practice of removing turbinates wholesale was no longer popular, and more dependence was placed upon hygienic treatment.

Dr. J. A. Stucky said that at the present time he used the catheter once when formerly he used it perhaps fifty times, and he did not interfere with spurs unless they were actually doing harm. He did, however, remove pathological conditions of the turbinate.

Dr. Max Goldstein said that if the author of the paper had confined his criticisms to the sclerotic form most of those present would probably agree with him. One should sharply distinguish between the sclerotic and the hypertrophic form.

Dr. W. L. Ballenger said that he understood that all the author of the paper desired was that each case should be thoroughly studied and "fashions" in treatment avoided. We should not set our faces against the removal of nasal spurs because at times these operations do much good.

Dr. G. L. Richards mentioned a case in which after the removal of an obstructing nasal spur the hearing improved very much without direct treatment of the ears.

Case of Thyroid Gland Tumor in the Larynx.

Dr. Walter A. Wells, of Washington, D. C., reported this case. He said that this condition was very seldom met with, there having been only nine or ten cases recorded in which normal thyroid gland tissue had been found in the larynx. His own case was peculiar in that the main thyroid showed microscopically only colloid degeneration, whereas the intralaryngeal tumor had the microscopical characteristics of an adenocarcinoma. In this case he had made use of the styptic action of gelatin with good result. The patient was a woman of fifty who had had a goitre for many years before coming under observation. She sought relief because of a sensation of choking and paroxysms of dyspnoea. Although the history indicated a strong hemorrhagic tendency after operative interference, the tumor was removed at several sittings, gelatin being freely used locally and successfully to control the hemorrhage. Out of nine reported cases of thyroid in the larynx, six occurred in women and four had been reported from one clinic, making it probable that this condition was not so rare as the statistics seemed to indicate.

Dr. M. A. Goldstein asked how the gelatin had been used in this case.

Dr. Wells replied that a ten per cent sterilized solution of gelatin to which had been added one per cent of calcium chloride and half of one per cent of sodium chloride, was employed. It was applied on a cotton swab before and throughout the operation.

Foreign Bodies in the Larynx and Lower Respiratory Tract in Children, with Report of Six Cases.

Dr. Thomas H. Halsted, of Syracuse, read this paper reporting six tracheotomies in children under two years and a half old for the

removal of foreign bodies lodged in the larynx and bronchus. Of the six cases five recovered and one died. At the time of operation, dyspnoea recurred after a short interval, and became constant with at times exacerbations. Cyanosis, epigastric recession were present in all cases, and because of the nature of the foreign bodies in his cases in only one would the x-ray have been of service. In his first case, a piece of a shell of a peanut was firmly lodged in the ventricle of the larynx. In the second case it was a coffee bean which remained in the right bronchus for one week. In the third case a peanut was extracted with much difficulty from the right bronchus, where it was wedged at a distance of four inches from the tracheal opening. The fourth case was somewhat similar to the third one, excepting that it was coughed up to the tracheal opening after the trachea had been opened and the trachea tickled with a cotton covered probe to excite cough. The fifth case terminated fatally, death due to pneumonia and the foreign body not found or removed, and although no autopsy could be obtained, there was every reason to believe that the case was one in which a gold ring had lodged in the bronchus. No x-ray apparatus was at hand at the time. The last case reported was that of a twelve-months old baby, in whom three fragments of egg shell had lodged in the larynx, remaining there for two weeks, causing great dyspnoea. The consent to perform tracheotomy could not be obtained for two or three days after the diagnosis was made, and then the child was in bad condition, but, nevertheless the operation was successful and the child recovered. The unreliability of statistics regarding operative and let-alone treatment was well shown by the fact that the author knew of a case in which a child died of pneumonia, and the discovery of a shoe button in one of the bronchi was the first knowledge that the parents or physician had that a foreign body had passed into the air passages. It was unsafe, the author thought, to postpone opening the trachea, particularly in children, after the ordinary methods failed to remove the foreign body.

Dr. G. Hudson Makuen said that Dr. J. A. Killien had reported the removal of a fish bone 22 mm. long from the left bronchus of a child three and a half years old, under control of the eye by means of bronchoscopy without injury to the tissues, and that Dr. A. Coolidge, Jr., of Boston, had spoken of the case with which foreign bodies may be removed from the trachea and bronchi through a straight tube placed in a previously made tracheal opening, artificial light being reflected into the tube from a head mirror, and had reported

three cases in which he had employed this method with entire success.

A Simple Method of Correcting Deflections of the Nasal Septum.

Dr. George Fetterolf, of Philadelphia, read this paper.

This paper appeared in full in the August, 1902, issue of *The Laryngoscope*, p. 584.

Dr. J. A. Stucky, said that he had been deeply interested in this paper, because at the meeting of the Southern section considerable criticism had been directed against the working qualities of Dr. Kyle's saw.

Dr. William R. Lincoln, of Cleveland, said that he understood this new instrument had been devised to perfect the technique of Dr. Kyle's operation. The instruments of Asch and others, were generally thought to be excellent for cases not urgently requiring operation.

Dr. M. A. Goldstein said that the mechanical features of this instrument seemed to him to constitute a distinct advance on former saws. The instrument takes up very little room in the nasal cavity, and its cutting edges operate on both the in and out strokes of the saw. He thought that with this instrument the operation could be made submucous more easily than with any other instrument.

Dr. D. Braden Kyle said that he had employed this V-shaped operation for the correction of deformities of the nasal septum for six years. When describing this operation about three years ago he had only made a limited use of it, but in the last three years this had been the only operation that he had done. At that time he made use of a saw which, if properly made, worked satisfactorily. In cutting out the V-shaped piece two things were accomplished, viz.: (1) the cutting reduced the redundant tissue, and (2) the septum was broken up. The V-shaped file does away with one instrument and shortens the operation materially. There was no bulging of the septum after the operation, and no redundant tissue if a sufficiently large V-shaped cut were made. With the V-shaped operation, and particularly with the saw file, perforation of the septum was practically wholly guarded against. The septum must be made to swing freely from the top. Before taking out a number of V-shaped pieces it was well to dissect up a flap of mucous membrane, which is afterwards allowed to fall back again. He had never seen any bad effect from even the prolonged use of his metal tube-splint. The tube should be flattened next to the septum.

Dr. Fetterolf, in answer to a question from Dr. H. Farrell as to why general anesthesia was employed in this operation, said that the object was to secure complete relaxation of the patient and avoid possible fainting during the operation.

Paraffin Injections.

Dr. Harmon Smith, of New York, by special invitation, demonstrated his method of making paraffin injections for the correction of nasal deformities.

Dr. C. E. Munger, of Waterbury, Conn., said that he had seen some of these cases, and he thought the best result was one in which there had been both a lateral and an antero-posterior deformity. He had had only one case, and in that one twenty-five minims of the paraffin had been injected, and apparently with good result.

INTERNATIONAL OTOLOGICAL CONGRESS.

The date of the International Otological Congress to be held in Bordeaux, has been postponed until 1904 in order not to conflict with the International Medical Congress, which takes place in Madrid next year.

WESTERN OPHTHALMOLOGIC AND OTO-LARYNGOLOGIC
ASSOCIATION—SEVENTH ANNUAL MEETING.

CHICAGO, APRIL 10, 11 AND 12, 1902.

(Continued from page 712.)

Thiosinamine In Ear Diseases. Dr. Jos. Beck, Chicago.

Published in full in *The Laryngoscope*, June, 1902, p. 435.

The Use of Electrolysis in the Eustachian Tube. Dr. Pierce,
Chicago.

(This paper will be published in extenso in a subsequent issue of
THE LARYNGOSCOPE.)

DISCUSSION.

Dr. Pierce (remarks after reading paper):—I have had cases where I would fail to pass the ordinary celluloid bougie. Then I would say, "Tomorrow I shall try electrolysis." Before doing so, however, I would insert the same bougie I failed with previously, and it would slip through without any trouble. If I had used electrolysis I would have thought that did it.

It has been said that electrolysis is less painful than the ordinary bougie. It is more painful. It is as painful as the ordinary bougie plus the excitation caused by the electricity. It is a dangerous thing. I have known of two instances where the gold bougie had broken off in the Eustachian tube. Its proximity to the carotid artery renders the danger from hemorrhage great in every case where the metal bougie is carried into the Eustachian tube.

Dr. Suker, Chicago:—I have been experimenting with Thiosinamine for about four years. These experiments having been confined particularly to lesions of the ear drum and middle ear. The greatest good that can be obtained from thiosinamine in any ear lesion is when this lesion is due to an infiltration of an exudation which has remained unabsorbed. Again, when the drum membrane has been ruptured and a complete restoration has taken place by cicatricial tissue, thus interfering with the minute vibra-

tions of the drum, this cicatrix can be materially thinned out by the administration of thiosinamine. Furthermore, when the drum membrane has been thickened from any cause whatsoever, particularly by infiltrate, it will be thinned out and thus restored to its normal thickness by the prolonged use of thiosinamine. Thiosinamine is a powerful glandular stimulant. At the same time it produces a marked increase in white blood corpuscles. The increase in the white blood corpuscle obtains first after there is an apparent decrease which lasts for several hours. This increase in the white blood corpuscles lasts throughout the entire course of the administration of thiosinamine. Upon these two points does the physiological action of thiosinamine depend. We get just as good effects and just as rapidly by giving it per mouth as by hypodermic injection. By giving it as suggested you avoid the usual complications incident of hypodermic medication, especially when the solution is alcoholic and glycerine, as it must be when thiosinamine is given in this way. The object is to get the patient as rapidly under the systemic effect as is possible. This you cannot obtain by hypodermic medication, for the reason just stated. Thiosinamine is absolutely harmless and can be given almost in any dose at any age, either young or old, provided, however, that in the individual there is no latent focus of inflammatory reaction. Should there be any such focus it is very liable to be fanned into activity by the thiosinamine. This practically is the only contra-indication for the drug. Should there be a latent tuberculosis, either in the lungs or in the knee joint, or should there be any low grade of chronic inflammatory reaction present, by giving the large dose at the outstart we may create serious trouble. Therefore, in suspecting these conditions and it is advisable to use thiosinamine for any thickening of the drum head due to any of the causes above mentioned or those suggested by Dr. Beck, begin the administration with very small doses, say $\frac{1}{2}$ grain, and gradually increase the dose. The way that I give it now-a-days is in capsule form of 3 grains each, three per day, and occasionally four, depending upon the rapidity with which I wish to get the patient under the full influence of its action.

No doubt Dr. Beck might have had better results in his cases of tubal obstruction which were due to an infiltration or chronic thickening of the tubal membrane, if he had given larger doses in connection with his electrolysis. No doubt the additional good

derived by the use of electrolysis in the administration of thiosinamine in tubal obstructions is a point well taken by Dr. Beck. This point certainly deserves further investigation. As before said, my experiments have all been limited to cases in which reduced hearing was caused by drum thickening or middle ear troubles due to inflammatory reaction.

Dr. Chas. N. Robertson, Chicago:—If you examine the Eustachian tube with a bougie the great preponderance of the strictures will be found in the pharyngeal two-thirds, and a great many of these will be found in the outer half of the two-thirds. I have only found two cases that I have been unable to pass the Eustachian bougie and the point Dr. Pierce makes in the subsequent attempts to pass the tube is one that should carry weight. I have had the same experience in being unable to pass the bougie for several days, and finally it would pass very easily, and not only a small one, but a larger size. It was the practice in the Urbantschitsch clinic in 1890 to use the Eustachian bougie as a diagnostic practice. Four or five years ago I reported in a paper on the "Treatment of Non-Suppurative Diseases of the Middle Ear," that anybody who did not do this was negligent of his duty, but that never received any comment at all, as I expected it would. I do not believe that electricity has any influence on inflammatory conditions unless it be those with a soft exudate. Perhaps then the pressure or reflex irritation would account for it. As regards the introduction in the Eustachian tube of a metallic bougie and having it broken and a piece left in the tube, I should not think that would be a serious difficulty. It seems to me that the bougie could be pushed through. It is not very hard to push it through the tube and as it emerges through the middle ear it can be seen through the drum. Of course you might have to cut the membrana tympani, but it is better to do that than to leave the Eustachian tube filled.

Dr. Goldstein, St. Louis:—I would like to call attention to the galvanic current in the use of the electric bougie. As the electrode comes in contact only with the surface of the mucosa and does not penetrate the tissues, the use of the electric bougie should be regarded as an application of pure galvanic stimulation and not as electrolysis. I doubt that the application of the gold-tipped bougie acting on the surface of the mucous membrane is to be considered electrolytic, and I have used this for two years past,

and I must say I have found no results accomplished by the electric bougie that cannot be obtained by the celluloid or whalebone bougie.

Dr. Beck, closing:—I use the dose smaller, but increased to as large a one as Dr. Suker used finally. So that the same dose, 3 grains three times a day or oftener, is also given, as stated in my paper.

I have used electrolysis in connection with the thiosinamine cases, using the gold bougie, and I found that the gold bougie was too stiff and very hard to pass into the Eustachian tube and so I had one constructed softer and I was able to pass that more easily. Patients complained considerably from the pain of passing the gold bougie. I believe quite a few times there was an injury to the mucous membrane, and a novice in doing this would certainly have trouble. The treatment then was with the simple celluloid bougie, and the ability to pass it easily later on was due to the use of the thiosinamine.

Dr. Pierce, closing discussion:—Dr. Robertson thinks that the breaking of a gold bougie in the Eustachian tube is of little moment—a matter of no consequence.

Of course the entire electrical current does not take place at the end of the gold bougie, but along its entire length, however far it may be.

I tried to bring out the fact that in all probability the bougie is stopped by those little pockets in the mucous membrane or by an obtuse or acute angle in the tube.

Otology. Lecture by Dr. B. Alexander Randall, of Philadelphia.

A vote of thanks to Dr. Randall for giving this splendid demonstration was passed.

Symposium: Otorrhoea. Otto J. Stein, Chicago; W. L. Ballenger, Chicago.

(This paper will appear in a later issue of THE LARYNGOSCOPE.)

DISCUSSION.

Dr. Pierce, Chicago:—It is difficult to state the surest way of treating the suppurative middle ear when it first presents itself. I know the indications as regards the situation of the perforation of the tympanic membrane for operation; likewise Schwartze. These views came to my notice ten years ago, and I have since been endeavoring to substantiate the results of observations that

these men made, and I must say that I believe to-day the situation of the perforation of the tympanic membrane is of very little value in guiding us to the proper mode of treatment of chronic suppurative inflammation of the middle ear. I have seen cases where this perforation was a little above the short process of the malleus where the history was that of a case lasting years, get well under the simplest treatment in a very short time. I have likewise seen cases where the perforation was in the inferior-posterior quadrants that refused to get well under every mode of treatment that we might choose to institute, and after the case came to operation extensive involvement of the mastoid process and cells was found. I believe, broadly speaking, that a perforation above a line drawn horizontally, with the short process of the malleus indicates an involvement of the bones of the ossiculae and the involvement of the walls of the tympanic cavity. But only broadly speaking, because all these pathological conditions can be found in cases where the perforation lies below the short process of the malleus. I think we are splitting hairs as practical aural surgeons when we map out such a thing as that to guide us in our treatment. A patient goes about with inflammation of the middle ear that has existed for years and you find the discharge is purulent—not muco-purulent, but purulent, and the perforation is anywhere you like and the probabilities are that you will have to do a radical operation. My plan is to take every case as mild and go through the usual treatment of the Eustachian tube, cleansing the ear as thoroughly as possible, packing with the gauze drain if necessary twice a day, giving the patient this chance for a month. If at the end of the month there is no thorough change in the symptoms then I resort to the ossiculectomy. I tell the patient it is best to have this because it is less dangerous than the radical operation. If after a few months a discharge still continues, then proceed with the radical operation.

Chronic suppuration of the middle ear seems to depend very much on some of the points that I was laying down in relation to its anatomy, and I cordially agree with what has been said to you. The middle ear is that portion of the auricular curvatures of which the tympanic cavity is only the more central part and you must bear that in mind in order to deal with these cases. As to the chronic inflammation, it is a faulty process of nature by which through an opening in the drum head externally cholesterol has

been engrafted upon the mucous lining of the cavity which is incapable of normal cleansing of the desquamating process which goes on there. Cholesteatoma may be occasionally a primary process, but it is generally secondary. Therefore when we are dealing with a chronic suppuration, I use, and tell my students to use a curette. The operation must be done in a number of cases. I am very slow to operate. Caries is an accident in many of these cases. I do not amputate the ossicles because I have a spot of caries on the margin of the tympanic ring. A little curettment will do in a great many of these cases, and I have practically ceased to do any ossiculectomies. The other has favored me in every case. I am not willing to admit that it is because I am clumsy. I have done a great many of them but they have every one failed. Of the cases which have been put forward for operation, an estimate of 50 per cent of successes is the limit of the most of the operators. One or two men say it is good practice. Fifty per cent of my cases were recognized as caries of the ossicles, have yielded perfectly to treatment, and so far as I have followed them it is as good as or better than the cases put forward as cured by operation in the same proportion. And when I have done under protest the operation of ossiculectomy, not nearly all have yielded.

Dr. Hollinger, Chicago:—Cholesteatoma is not an absolute indication for operation. Such a case is usually to be handled with conservative treatment. If we find the case after careful treatment with syringing and cleansing for four to six weeks has not yielded at all and does not show any influence on its behavior, then we are justified in advising an operation provided we have clearly shown the other does not work. The next point, as to the use of the Stacke-Schwartz. To put that clumsy instrument into the middle ear you must use the greatest care. The removal of the middle ear is absolutely not indicated in every case of radical operation. In the last four years, in the interest of as good a function as possible, I try to save the posterior part of the margin and cut into the antrum and open it to full view and try to cover it with epidermis. There is no danger then of injuring the facial nerve, because we see the whole field, and you have a full view of the middle ear and there is no place where necrosis can occur and you not see it.

Dr. Todd, Minneapolis:—In curetting the middle ear granulations, it is possible for us to set up a septic thrombosis and that

it is not to be looked upon as a simple process, but a serious operation. A young man consulted me about a month ago. He was a student with a strong physique and had not suffered from his suppuration excepting headaches. I found granular tissue all around the edges of the drum, the drum-head absent, and advised that he would need treatment, at least curetting of the granulations, and likely later the radical operation. He was desirous of going home, and I cocaineized the middle ear and curetted the granulations. It was not my intention to remove the ossicles. I think it is a hospital operation. This was an excellent patient, however. I got rid of the granulations. Did not cauterize them. I also removed the incus. I then had the patient lie down for a time afterwards and then he went home feeling first rate. The first day he suffered from deafness. I do not think the removal of the ossicles had anything to do with the subsequent troubles, but the removal of the granulations was the cause of the subsequent result. He was more or less exhausted; lost his appetite; some dizziness so he could not sit up for three or four days, then was able to get up. His temperature was in the neighborhood of 100°. He then came to my office for two days, but I could see he was not as well as he appeared to be, and put him in the hospital. The temperature was then 102°, the highest it had been up to that time. He was there two days when they telephoned me he had a chill and temperature 104.4°. I then went into the mastoid, in spite of the fact there was no tenderness over the mastoid. There was some tenderness in the neck over the jugular. He had one vomiting attack at that time. I should have gone into the lateral sinus at that time, but did not. Did a radical operation. Found the cavity full of granular tissue and of course having pus, and removed that. Two days later I did what I should have done at that time, opened the lateral sinus, ligated the jugular and found the pus extending back from the sigmoid sinus. The patient is doing nicely. Has had a few abscesses which were superficial.

Dr. Prince, Springfield, Ill.:—I had an experience in the same direction as the last speaker. A child brought to me with polypus in the middle ear and I curetted the polypus and about two days after the child developed meningitis and a few days later he died. Also another case of similar character was seen, so that now I am always very shy of a polyp in the middle ear and believe we have patients where the polyp in the middle ear is an omen of

great significance and too often indicates that it is a symptom of perforation into the cranial cavity. I have a patient under observation. He is an old gentleman in the soldiers' home at Quincy, and he has a polypus in the middle ear. That polypus on three occasions had grown to such an extent that it was an obstruction, and he had gone into a comatose state. Then the polypus was removed, after which he got up and remained free from trouble excepting a little suppuration from the ear until the polypus developed again a year later, maybe. I never use anything but alcohol in the treatment of granulations in the middle ear.

Dr. Holmes, Cincinnati:—Curettement in my hands never gained favor until the last meeting. A young woman had suffered from a slight chronic otorrhoea since childhood, about 20 or 30 years, yet the indications did not seem sufficient to warrant removal. At last she requested the removal, which I did. I found on removing the ossicles that they were affected and there was some necrosis up at the edge which I curetted later thoroughly, but did not go against the opposite side or further down in the region of the oval window. Everything looked perfectly well for one week. Then she began to develop a facial paralysis, preceding which she had been in the hospital three days. The paresis had been set up by the curettement and extended downward. I do not like the facial paralysis which comes from strangulation; I therefore made the radical operation and expect the face will recover its former mobility. After a mastoid operation, after two weeks, in a young man who had been operated on, a facial paralysis developed after touching these granulations. The facial paralysis lasted ten days. Also had a case last winter, a woman with a history of a chronic discharge for many years, one morning found her face completely paralyzed. It occurred over night. I sent her at once to the hospital and advised her friends. Waited four or five days until the paralysis became complete, then made the classical operation. Did not remove the ossicles and drum, and the facial paralysis recovered and disappeared in about two weeks. These are the only cases I have had. Had the mastoid operation about 130 or 140 times and have never had a facial paralysis, but we are liable to have it any time. I must say that I have had better results than my good friend Dr. Randall with the extraction of ossicles. Have tried to be careful in selecting

the cases to be subjected to this operation, and I find that there are not so many that should be selected for that. I think you must study your cases very thoroughly. I have been very fortunate and had only 2 per cent of failures in ossiculectomies, and permanent so far as I know and they are all in private practice. So I am in favor of it in well selected cases. I do not believe a simple operation should be made in the office and the patient permitted to go about.

Dr. Beck, Chicago:—A case came to me about a year ago with perforation posterior-inferior, that is, in the external canal, close to the membrana tympani and at first, when found with a probe, very small. A foul odored pus came out with it. I found it soft to the probe. In trying to move the probe was not able to do so. I used the otoscope and found the membrana tympani was not perforated. The patient said he never had any trouble or discharge from that ear that he could remember, but he had had headache, pain in the back of the head constantly and I concluded there must be some necrosis of the tympanic bone in the region of the sinus. No tenderness over the mastoid. Both physicians advised operation and this was done five days ago, after trying to clean it up by washing and enlargement of the opening; was not able to improve the condition, so did the operation. The antrum was small and filled with some granulations, but no pus. Did not get into the middle ear, for it did not seem to be involved. Cutting from the fistula to the antrum had to cut over to avoid the point of the facial nerve. I curetted the large cavity and cut down back to the granulating cavity. The bottom of the same appeared to be healthy bone to the curette. In making the usual incision into the external canal, I completed the operation at that point. The patient has had no complications whatever since the operation. This is the fifth day. In regard to camphor oxol, the patient gets it for home use and it is used in the clinic and it has cured at least fifty cases. Absolutely dried up the ear. Cases that have lasted 10 or 15 years with suppuration. Camphor oxol is an alcoholic substance. It does the work—how I can't tell.

Dr. Murphy, Cincinnati:—Experience has taught me to have a great deal of respect for these granulations we meet in the middle ear, and the temptation to curette them, of course, is very great. I believe, however, our trouble arises when we are too energetic with the curettement. It is the protecting membrane down near

the lateral sinus that we do not want to disturb. These granulations will disappear under a very light curettement if we furnish ample drainage. It is only when we curette down and attempt to remove all the granulations covering the dura that we do injury. McCuen cautions us against the disturbance of these granulations. I saw a case two weeks ago in which the man was struck on the tip of the mastoid with a snowball and a sinus appeared within a few inches of the external auditory canal which refused to heal after six weeks' treatment. I then laid open the bone and found granulations were traced down and were in contact with the lateral sinus. A quantity of pus cozed up from along the side of the sinus. Removal of about half the granulations seemed to answer the purpose and the patient has made an uneventful recovery.

Dr. Ballenger, closing discussion:—It is very interesting to notice the difference of opinion that exists amongst men of prominence here this afternoon. The speaker reports 100 per cent of successes, Dr. Holmes 98 per cent, and Dr. Randall, I think, 50 per cent, and it would be interesting to know why the results are so different. It may be on account of the method of operating. It might be on account of selection of cases, as suggested by Dr. Holmes, and again, it might be on account of prejudiced opinion of the men in regard to the successes they had. That is a personal reflection, because I am guilty of imagining that I get better results than I do. I do not believe there is a man present not subject to the same thing. So that part of our successes are imaginary and part are real. A man that has 100 per cent of success by any operation is imaginary, and so I think with 98 per cent there is a little imagination. With 50 per cent there might be credulence as to the results obtained. I simply mention that to call attention to the fact that three men of prominence have somewhat different results, and there are various ways of explaining the differences.

Dr. Pierce refers to the scheme of Loiter's as a thing of no value whatever as a guide in selection of methods of treatment. That is a very broad statement and probably is to be judged in the same manner as I have judged the statistics given on the subject of ossiculectomies. I believe it is of value, and as Dr. Beck has pointed out, the location signifies something; that it is an absolute guide would be silly for me to say, and that it has absolutely no value would be quite silly to say. The success of camphor oxol or with any other treatment, or with the mopping

out with cotton mops depends upon the thoroughness with which the parts are cleaned. The main thing to accomplish is free drainage of the parts. With regard to camphor oxol or any other solution in the middle ear, I believe we will get better results if we will inject it through the Eustachian tube or through the perforations in the drum-head and not only cleanse the middle ear but the Eustachian tube as well. We overcome the tendency for the formation of cicatricial tissue in the Eustachian tube. I was interested in Dr. Hope's method of using camphor oxol and these are the methods he used. I believe you will have as good success if you use normal salt solution.

A Case of Rapidly Fatal Carcinoma of the Epipharynx. H. W. Loeb, St. Louis.

(This paper will be published in extenso in a subsequent issue of THE LARYNGOSCOPE.)

DISCUSSION.

Dr. Reynolds, Louisville:—I have in my care at the present time a lady about 52 years of age who enjoyed all her life robust health. She weighed about 180 pounds about three years ago. A year ago last September she came to see me with what appeared to be an epithelioma occupying both pillars of the left side of the pharynx, occupying the upper part of the tonsil and the base of the uvula and in the pharynx a projecting mass of vascular tissue which had bled profusely the evening before. Had no pain until that time, although she knew her voice was indistinct and it was difficult to swallow. This she had recognized for several months. It came on slowly and imperceptibly. She presented such an alarming appearance at the first examination that I thought best to seek counsel, and after an interview with her husband, it was decided she should visit two other specialists in Louisville without any word from me and get a written opinion. One of the gentlemen suggested that it might be syphilitic. Another suggested that it might possibly be tuberculous or syphilitic, and both of them suggested that it might possibly be cancer. It was my opinion that it was cancerous at the first examination. I made local applications and treated her on the expectant plan, and a little more than a year after the treatment was begun it was noticed that the submaxillary glands on the opposite side were enlarged. It has now entirely obliterated the depression and there is a well-marked bulging of liver-colored appearance on

the right side. The appearance of the anterior covering of the base of the uvula and the destruction of the entire tonsil on that side and both pillars, mainly the posterior one, have been held practically in abeyance. It is not painful, showing no tendency to bleed and appears to be covered with epithelium at the base of the tongue. I do not believe there are more than 27 cases such as I have mentioned in which the growth appears originally in the epipharynx.

Sources of Error in Functional Tests of the Ear. Dr. A. H. Andrews. This paper appeared in full in the April, 1902 issue of *The Laryngoscope*. (See p. 249.)

DISCUSSION.

Dr. Vail, Cincinnati:—There are two kinds of error, that which is chargeable to the patient and that which is chargeable to the physician examining the case. A great many people are tone deaf. We ask them if they hear certain tones. They cannot hear these tones, they are deaf to tones. They get a sensation. Asked to imitate that tone or pick it out on a musical instrument, they cannot get within five intervals. It is a common condition. They cannot sing and know nothing about music. How are you going to tell if a patient is going to hear a C. and A. fork; if they are tone deaf they cannot get much out of it. Then people imagine they hear the tone when there is none at all. A great many people say they are deaf and you test them and find they are not deaf, and they will exaggerate and you cannot tell. The errors the physician is apt to make are mostly in the technique, due, as the essayist has said, to his unfamiliarity with the test.

Dr. Ballenger:—The tone deafness as usually found is not due to a defect in the remnant of hearing, but due to a lack of education of the remnant of hearing. Another source of error that I believe Dr. Andrews did not specifically touch upon is that in using these tests reliance is often placed upon a single test, which it seems to me is rarely a safe thing to do. If we use these tests we must make several of them in each instance—three, or four, or six, and if they agree in pointing to one particular condition, then we may place considerable reliance upon the information they give. If they do not agree, then we must consider very carefully before we accept the information that seems to be gotten from them.

Dr. Andrews, closing discussion:—Tone defect has nothing whatever to do with hearing ability. You may be color blind and

still able to distinguish the shape of the body, the color of which you may not know. So a patient may be unable to reproduce a sound, but that is no sign he does not hear it. The question of tone deafness does not enter in the least into the question of the functional diagnosis of hearing. Education is a congenital condition and not amenable to treatment. One's musical ability can be improved by education, but where he has tone deafness, no education will remedy it.

Dr. Holmes suggested that as the society had grown and new wants and emergencies had arisen, it would be well to appoint a committee for the purpose of revising the Constitution and By-Laws, to report at the next meeting of the Association.

Moved that such a committee be appointed, and the President appointed Dr. Woods of Chicago, Dr. Alt of St. Louis, Dr. Stillson of Indianapolis, Dr. Fryer of Kansas City, Dr. Jackson of Denver, Dr. Gifford of Omaha and Dr. Wurdeman of Milwaukee.

It was then moved, seconded and carried that the LARYNGOSCOPE and the American Journal of Ophthalmology be made the official organs for this year.

Officers for the ensuing year were elected as follows: Dr. Wm. L. Ballenger, Chicago, president; Dr. J. O. Stillson, Indianapolis, first vice-president; Dr. J. M. Ray, Louisville, second vice-president; Dr. Edwin Pynchon, Chicago, third vice-president; Dr. Derrick T. Vail, Cincinnati, secretary; Dr. O. J. Stein, Chicago, treasurer.

The eighth annual meeting will be held in Indianapolis, Ind., April 9, 10, 11, 1903.

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The Acute Retro-Pharyngeal Abscess of Infants.—PEARSON, S. V.
—*Lancet*, October 26, 1901.

This is not a common complaint, but it is an important one, for an undiagnosed case most frequently ends fatally. Irving Snow,¹ who recently published three cases, makes a similar statement—viz., that retro-pharyngeal abscess unrecognized and untreated usually ends in death. And Blackader² says that the notable fact with which one is impressed on reviewing the literature is the frequency with which these cases remain undiagnosed or receive faulty diagnoses. Yet the diagnosis is not as a rule difficult. The disease is frequently overlooked because its occurrence is not thought of. When diagnosed the prognosis is fairly good. The common type of case presents the following picture: An infant under two years of age is brought, the complaint being that during the course of the last few days the child's voice has become gradually muffled, that there has been difficulty in sucking, or apparent pain on swallowing, that the child has been restless, has loss of appetite, and has been constitutionally ill. In addition to this it is remarkable how frequently these troubles have been preceded, or are actually accompanied, by a purulent nasal discharge. Very often at the time that the infant is first seen there is considerable obstruction to respiration, sometimes accompanied by much recession. Such a case may easily be mistaken for laryngeal diphtheria, especially when it is found that some glands in the neck are tender and enlarged, and upon examination of the throat the tonsils appear red and inflamed, and possibly covered with a mucoid secretion. But it will be observed that the voice is different

¹Archives of Pediatrics, January, 1901.

²Ibid, 1889, p. 9.

from that in acute laryngitis, and there is not that characteristic croupy cough so often present with laryngitis. Also, on more careful examination it will be noticed that one side of the neck is fuller than the other, and when looking at the throat it may be noticed that one tonsil and the corresponding posterior pharyngeal wall may appear to be pushed slightly forwards. Too much stress cannot be laid upon the importance of making a digital examination in all cases where symptoms suggest such a condition. A very small amount of education is required in order to detect a small swelling, and the most inexperienced can diagnose a well-marked abscess in this region. The only difficulty which arises is the difficulty of making sure that the swelling was fairly big and quite elastic to the feel, but subsequent events proved that it did not contain pus. It is said to be very rare for the swelling to become at all large without suppuration having occurred, and this has been the author's experience.

It seems to be generally admitted now that the cause of the abscess is acute post-pharyngeal suppurative adenitis. If the constitutional symptoms are slight and the swelling is small an expectant line of treatment should be followed. Under these circumstances the swelling may soon disappear, any local condition, such as rhinitis, having been attended to and a mild purge given. In all other cases, however, operative measures are indicated. Except in the worst cases immediate operation is not necessary. Very often an infant will be in a much better condition for operation by waiting for a short time, during which the swelling can be re-examined to see whether there is any chance of its being non-suppurative and subsiding. The only danger associated with this postponement is the possibility of an increase in the dyspnea. Infants are liable to a sudden increase of any obstructive dyspnea, and probably this is due to some spasm added to the primary cause. The actual operation in the case of opening the abscess externally is often quite easy, and is generally not very difficult. Moreover, the after-treatment of cases treated by the external method is entirely satisfactory.

The position of the incision should be immediately behind, and parallel to, the sterno-mastoid; its centre should be as nearly as possible on the same level as the centre of the swelling behind the pharynx, or a little below this. Towards the bottom of the wound the spinal accessory nerve must be avoided. Having used a knife to cut through skin and fascia, the posterior edge of the sterno-

mastoid being carefully exposed and the muscle pulled slightly forwards, the knife should be abandoned in favor of a blunt dissector and a pair of dissecting forceps. By the time this stage of the operation has been reached it may have been necessary to remove one or two slightly enlarged glands situated behind the sternomastoid. From this time onward the operation consists in a careful separation of the structures until the prevertebral region is reached. The landmarks are the tranverse processes and the plane of the anterior surface of the vertebral bodies. Keep well back, feel with the finger for these landmarks, and there will then be no danger of injuring the jugular vein or cervical sympathetic, the only two structures likely to be interfered with. The patient should never be at all deeply under. Then matters are much facilitated by introducing one finger into the mouth and a finger of the other hand into the wound. By this means the exact limits of the abscess-cavity can be made out. Then a fairly fine-pointed blunt dissector, or similar instrument, can be passed along the front of the finger in the wound and the abscess-sac pierced. The pus flows out readily when the opening is made larger by means of a pair of sinus forceps guided into the cavity by the instrument already introduced. Irrigate the cavity once or twice with some antiseptic solution. Then a very small drainage-tube should be introduced right to the greatest depth of the wound, and perhaps a small strip of gauze around this superficially. One or two stitches are then put in to bring the edges together above and below the tube, and an ordinary antiseptic dressing is applied. With regard to after-treatment, there is nothing very much of importance. It is best to leave the small drainage-tube in for about forty-eight hours or three days, to irrigate the wound by gently syringing it with 1 in 4,000 perchloride or biniodide solution for the first few days, and after that with a weak solution of iodide. It is best to dress it twice within the first twenty-four hours of the operation, but after that once daily is sufficient. After the tube has been removed a very thin plug of gauze should be introduced, and every other day slightly shortened. Some discretion is required in carrying out this detail; the point is to strike a mean result between getting a reaccumulation of pus and a long-lasting callous sinus. Some indication as to the rate of healing of the sinus is given by stating that in about three weeks from the time of the operation the wound should be healed.

ST. CLAIR THOMSON.

The Choice of an Anesthetic in the Adenoid Operation,—RICHARD ARTHUR (Sydney, Austral.)—*Australas. Med. Gaz.*, July 21, '02.

This is a pungent article, the author boldly condemning the use of chloroform, giving his reasons, and supporting his attitude by quoting undoubted authorities. He holds that chloroform is dangerous for two reasons:

1. That the (adenoid) patient is often of the so-called lymphatic diathesis, or status thymicus, characterized by enlargement of the tonsils, lymph follicles and glands, of the spleen and of the thymus gland. In this condition there seems to be peculiar risk in the administration of chloroform, due, it is thought, to the heart being prone to dilation with resulting sudden syncope.
2. That the child with adenoids, especially if there is also hypertrophy of the tonsils, is already suffering from imperfect aeration of the blood, and in this state it is very easy to overstep the limits of safety, more particularly if there is any struggling.

While it must be admitted that many deaths have been recorded in adenoid operations, where in every case chloroform has been the anesthetic used, Arthur thinks one can safely challenge the supporters of chloroform to bring forward a single instance with a fatal result where another anesthetic has been used.

He holds that it is no argument for anyone to state that he has administered chloroform without untoward results in a large number of cases, and therefore it must be safe. This is, he says, a flagrant example of imperfect induction. One is not justified in drawing a conclusion as to the safety of chloroform from a limited number of instances, when both a priori considerations and the data of general experience are opposed to such a conclusion. The immunity from serious results may be ascribed to a fortunate choice of case, to exceptional skill in administering the anesthetic, or to the unknown element of luck; but from the mere calculation of probabilities the possibility of disaster is always imminent.

However small the proportion of deaths from this cause, he holds there is no justification for it. There are anesthetics which, judging from experience, can be pronounced perfectly safe. First and foremost stands nitrous oxide by which an anesthesia is obtained lasting for about 20 to 30 seconds, followed by a period of about a minute of imperfect anesthesia, in which, though there may be struggling and cries, there is little or no consciousness of pain or discomfort. This should afford plenty of time to clear out the naso-pharynx, and if necessary remove the tonsils.

It has been urged against nitrous oxide that the apparatus required is cumbersome, and cannot be carried about. The author thinks this objection has been exaggerated, for the whole apparatus, including a hundred gallon cylinder of gas, can be packed into a hand-bag, and weighs only about ten pounds. The argument about the cumbersome and inconvenience either of gas or ether is besides the question. The anesthetist's first duty is not to suit himself, but to see to the safety of the patient. The same objection as to inconvenience may be urged with equal force against the aseptic technique, which always involves trouble to the surgeon and occasionally to the patient.

If gas is not available, or the operator needs a longer anesthesia, there is no reason why ether should not be chosen. An objection is made that ether increases the hemorrhage during the operation. While not prepared to admit that this is true, the author holds that even if it is, the loss of a slight extra amount of blood is of little importance.

EATON.

Treatment of Whooping Cough by Compressed Air.—ROGAZ AND DELMAS.—*Archiv., de Med. des Enfants*, May, 1902.

This article contains a report of fifty cases treated by the compressed air method. The precautions necessary are to have the pressure in the air chamber both increased and decreased very gradually. The maximum pressure was one and two-thirds atmospheres, and this to be used only after several sittings.

The treatment can be used in the cases of children of all ages, with the result that the attacks are less frequent, less intense and of shorter duration. The catarrhal bronchitis is greatly diminished. The general condition of the patient is better. The total length of the disease is lessened. There is no danger attendant upon its administration, and dilatation of the right heart (frequently found in severe cases), does not preclude its use.

M. A. G.

The Method of Inhalation in the Treatment of Tuberculosis of the Larynx.—BERBINEAU.—*Rev. Heb. de Laryng. D'Otol. et de Rhinologie*, May 17, 1902, No. 20.

The author reports his results obtained during three years' experience. He uses a glass tube for the inhalation which enables the patient to apply his own treatment. Every case treated was successful. According to Leduc, inhalations of diodoform is the most useful for the cure of tuberculosis.

W. SCHEPPEGRELL.

Rheumatism as a Cause of Epistaxis in Children.—PHILLIPS, SIDNEY.—*Lancet*, February 22, 1902.

Ten cases are quoted to show the association of rheumatism and epistaxis. In all these cases the urine was carefully examined, and it was found to be free from albumen. There was no local nasal disease, and no cause could be found for the epistaxis except that there were evidences of a rheumatic diathesis. The author could bring forward many other cases similar to the above. In some of them the epistaxis came on with an attack of acute rheumatism, in others epistaxis alternated with attacks of articular inflammation or was preceded by them, and in some cases it occurred in connection with chorea, which was presumably rheumatic. That in children synovial effusion into joints and articular rheumatism may occur without any pain has often been pointed out, but it is even now scarcely sufficiently remembered; and if the joints were examined in some cases of epistaxis a clue would be often found to the cause of the latter.

Epistaxis is one of the toxic effects of salicylates given internally. Dr. L. Shaw¹ found that it occurred in eleven patients of 174 under the treatment of rheumatism by salicylates. None of the patients referred to, however, had taken salicylates before the epistaxis occurred, and all but one, who did not respond to it, took the salicylate with good result. It is possible that in some cases of rheumatism treated by salicylates where epistaxis occurs it is due to the disease, and not to the drug.

In all the literature on rheumatism the author has not found any suggestion that rheumatism may cause epistaxis except indirectly, through setting up endocardial changes. In a very excellent article on epistaxis by Dr. F. de Havilland Hall² various alterations in the blood are mentioned which are attended with epistaxis as a prominent symptom—viz., hemophilia, purpura, scurvy, chlorosis, anemia, pernicious anemia, and malarial poisoning, but not the rheumatic diathesis. The only suggestion that rheumatism has any influence whatever in the causation of epistaxis is in a paper by Dr. Rendu³ of Paris, quoted by Dr. Hall, in which it is said that epistaxis may occur in young persons who become later the subjects of piles or rheumatism. It may be said that epistaxis occurs in the young who are already the subjects of rheumatism.

There is nothing inherently improbable in the supposition to which many cases point that rheumatism may give rise to epistaxis, for many other blood states are acknowledged to do so, and rheumatism is a known cause of one variety of purpura in which hemorrhages occur from cutaneous and mucous surfaces.

ST. CLAIR THOMSON.

¹ Guy's Hospital Reports, 1887.

³ La Semaine Medicale, June, 1884.

² Westminster Hospital Reports, 1893.

Transillumination of the Frontal Sinus.—DR. CLAUS.—*Archiv. fur Laryngol.*, Band XIII, Heft. I.

The author's experiments were made on 117 cadavers from Professor Langerhan's clinic. The old method of transillumination was used, as well as that introduced by Arthur Meyer in 1901, where the lamp is placed in the globella and the attempt made to throw the light upward through the sinus. The result of the whole work was to show the utter untrustworthiness of transillumination. The most frequent cause of failure to illuminate the sinus, was the thickness and vascularity of the bony walls. Even large sinuses could not be illumined when the walls were thick. In several cases where pus was present, the transillumination was successful, since it happened that in these very cases the walls were thin. In only one case of empyema, where the cavity was filled with thick, green pus, was a shadowing perceptible.

Serum, or a sero-sanguineous effusion did not prevent the passage of the rays.

In every case, after experimenting with the light, the sinuses were chiselled open and their exact condition ascertained. Reasoning from these results, the author naturally places little importance on the value of transillumination of the frontal sinuses, as an aid in diagnosis.

VITUM.

Treatment of Chronic Suppuration in the Frontal Sinuses.—H.

LAMBERT LACK.—*Edinburg Med. Jour.*, June, 1902.

The author first discusses treatment through the nose by means of antiseptic irrigation. He thinks this method should be reserved for those cases in which the patient is very averse to an external operation, in which irrigation of the sinus is easy and in which no urgent symptoms are present. He does not, however, favor this line of treatment. With regard to the performance of the external operation, he considers that the decision should be left to the patient, unless there are any urgent symptoms present, such as severe pain, deficient drainage, bulging of the cavity, cerebral symptoms or general ill health. The external operation is next discussed and after viewing the various methods of drainage that have been practiced and citing a number of cases which have terminated fatally, he concludes by making a plea for obliteration of the sinus as the best means of effecting a cure in almost every case. Even when the sinus is large the disfigurement is not nearly so great as might be anticipated.

A. LOGAN TURNER.

The Relation between the Voice and the Structure of the Vocal Organs.—M. G. AVELLIS.—*Rev. Heb. de Laryngol., D'Otolog. et de Rhinologie*, May 10, 1902, No. 19.

Observations on singing birds show, in a general way, that a stronger and more distinct vocal organ is associated with an inferior faculty of song. There are numerous exceptions to this, however, as in cases in which the power of song is developed and elaborated by a sort of purely intellectual exercise, but in which the organs of song show only mediocre development (parrot); while on the other hand, we find the organs perfectly developed, accompanied by but ordinary faculties of song (crow), susceptible, however, to improvement by exercise.

We know also that the male singer has a much stronger voice than the female, and that in the true singing birds the muscles connected with song production have a marked development in relation with the general system.

The author states positively that the increase of the faculty of singing is accompanied by a greater development of the vocal organs, while the observations made in the field of ornithology justifies the conclusion, from this point of view, that it is not the organ which creates the function, but the function the organ.

The moral faculties transmitted by inheritance, which in this case is the instinct to sing, stimulates the function which results in the greater development of the organ. In cases in which the function is absent, the physical development remains latent, as in the females of singing birds.

The degree of development of the vocal organs is then the result of exercise, the production of a function.

The same laws are applicable to the human larynx. The long continued practice of a singer shows distinct enough in an autopsy, but is not noticeable in the laryngoscope, as it never reaches the proportions necessary for this. It is thus that song is a creation of art and not a production of strength. From the standpoint of accuracy, the term "larynx of a singer" means nothing. Every well-trained larynx, whether of the actor, orator, preacher, or simply of a public crier, should after death, resemble that of the singer. The principle characteristics of the singer are found in the brain and not in the larynx.

The sense of rhythm, of tact, of tone, of the pitch and purity of sound, the musical memory and the physical faculty of expression are the characteristics which distinguish a singer, and one can no more judge the talent of a singer from his larynx, than the musical talent of Sarasate from his hand.

W. SCHEPPEGRELL.

Carcinoma of the Oesophagus.—C. HENNEBERT.—*Revue Heb. de Laryng., D'Otol. et de Rhinologie.*—May 3, 1902.

A man of forty-two years died of oesophageal carcinoma located 23 centimetres from the dental arch; death resulted six months after the first symptoms developed. The following are the points of special interest in the case:

In the beginning, the appearance of a persistent cough resembling whooping cough was attributed to compression of the pneumogastric. During the last two months food was taken only by means of a soft tube. Catheterization, practiced every second day, at first resulted in marked improvement of the general condition. A piece of tumor expectorated during a paroxysm of coughing enabled a correct histologic diagnosis to be made. Nothing is stated as to whether the operation of gastrotomy was considered.

W. SCHEPPEGRELL.

Treatment of Acute Otitis Media by the General Practitioner.—

F. S. OWEN.—*Western Medical Review*, Feb. 1902.

A very clear and concise review of the subject of acute otitis media, especially as to its treatment by the general practitioner. Nothing new is added to the subject by the author, but his presentation is so lucid and in such perfect accord with the teaching of the day that the paper merits reading by the specialist as well as the general practitioner.

STEIN.

Brain Complications in Suppurative Ear Disease.—F. G. STUEBER, *American Medical Compend.*, Feb., 1902.

Owing to an imperfect understanding of some of the more serious complications of suppurative ear disease, the general practitioner very often mistakes brain symptoms for typhoid, malarial and other fevers.

Several of the various routes of infection are mentioned, with particular stress upon the labyrinth as an avenue by which infection is transmitted to the interior of the cranium. The author, however regards the petro-squamosal suture as a most unlikely route for such an infection to travel by.

STEIN.

Some Results of Hearing-Tests of Chicago School Children.—D.P. MACMILLAN.—*Medicine*, April, 1902.

In carrying out these tests an electrical instrument called the audiometer was used, and with it nearly seven thousand school children were examined. The results show that those between the ages of 6 and 18 tested for aural acuity, 16 per cent were found defective in hearing in one or both ears; $6\frac{3}{4}$ per cent of the total number were found defective in both ears.

From these examinations it was found that there existed a marked causal connection between defective hearing and the pupil's ability to advance in the prescribed school courses. It was also noted that such pupils were slower in movements and more defective in growth and speech.

STEIN.

The Complete Mastoid Operation with Thiersch Grafting.—Bal-lance.—J. LOCKHART GIBSON (Brisbane, Austr.)—*Australasian Med. Gaz.*, July 21, 1902.

Gibson remarks that Ballance's mastoid operation is not only the most radical of all the complete mastoid operations, but appears to be attended with less disfigurement, and is followed by quicker healing of the bone cavity than is the case in any other operation of at all radical a nature. Ballance's modifications of the operation are thus given:

1. The incision, though long, is in the line of the hair, and therefore practically invisible after complete healing.
2. The mouth of the meatus is enlarged, and it is so without disfigurement.
3. The posterior wall of the cartilaginous meatus, together with a part of the concha, is displaced upwards and backwards and fixed so as to form the outer and part of the superior wall of the posterior portion of the enlarged meatus.
4. From ten days to three weeks after the operation the essential parts of the granulating walls of the enlarged bone cavity are covered with a Thiersch graft, which, if successful, leads to rapid healing of the whole cavity and its being lined by a thin layer of epithelium.

Gibson gives in detail a history of a case illustrating the steps of the operation and the process of healing, which account is too long for abstraction.

EATON.

Two Cases of Abscess in the Temporo-sphenoidal Lobe Presenting No Lesion in the Ear.—LEES, D. B.—*Lancet*, May 3, 1902.

Abscess of the temporal lobe of the brain is so commonly consecutive to suppuration in the middle ear that it is desirable to record instances where no ear-lesion is present. In the following cases there was necrosis of a small portion of the petrous bone, but the middle ear appeared to be perfectly healthy. Septic organisms may have been conveyed to the petrous bone and to the brain from a transient otitis externa, which is not uncommon in children. Mr. C. Mansell Moullin described a case at a meeting of the Clinical Society of London,¹ in which an abscess was found in the temporal lobe, although there was "no sign of middle-ear disease."

Case I. A girl, aged six years, was admitted into the Hospital for Sick Children, Great Ormond street, on November 14, 1901, under the care of Dr. D. B. Lees. For two months before admission she had suffered from frontal headache and earache and for the previous month from vomiting. On admission her attitude was one of cerebral irritation, with evidence of marked photophobia. She complained of severe intermittent pain in the right frontal region. No paralysis or rigidity was present, but there was optic neuritis on each side, which was more advanced on the right side. Percussion of the head elicited tenderness only over the right side of the forehead. The tympanic membranes were normal, and no discharge from the ear was found. The child's condition remained about the same till the morning of November 25, when she died suddenly.

Necropsy.—At the post-mortem examination an abscess containing about two ounces of greenish inodorous pus was found in the right temporo-sphenoidal lobe, with rough walls of some thickness and consistence. On the dura mater, facing its point of nearest approximation to the surface and overlying the external auditory meatus about $\frac{1}{2}$ inch from the tympanum, was a hiatus $\frac{1}{4}$ inch diameter, with discolored margin, leading to a necrotic depression in the bone. On chiselling away the latter the underlying lining membrane of the meatus was found to be normal. The dura mater over the middle ear was normal, and the cavity of the latter and the mastoid cells contained only a trace of clear mucus, the walls and ossicles showing no change. The organs in other

¹ Transactions of the Clinical Society of London, Vol. XXVII, 1899, p. 124.

parts were healthy. A pure culture of the streptococcus pyogenes was obtained from the pus.

Case II.—A girl, aged one year and nine months, was admitted into Dr. Lees' ward on July 16, 1896. Three months before admission she had suffered from vomiting, and used to put her hand to her head and cry out. For three weeks before admission she had lost the use of her limbs, a condition which was ushered in by a fit. The child was drowsy, with bulging fontanelle, and presented a left-sided hemiplegia. A double internal squint subsequently appeared, but no optic neuritis. Death occurred on August 16.

Necropsy.—The post-mortem examination disclosed an abscess of the size of a hen's egg in the right temporo-sphenoidal lobe, with tough walls and containing thick, greenish pus. Some amount of basic meningitis was also present. The brain and membranes were adherent to the right great wing of the sphenoid, and the right petrous bone showed a small patch of disease of about the size of a three-penny piece above the tympanum. The middle ear on this side was healthy and the membrana tympani was clear and thin. Otherwise the body showed no abnormality.

Remarks by Dr. Lees:—In each of these two cases an abscess in the right temporo-sphenoidal lobe apparently resulted from necrosis of a small part of the petrous bone, without any affection of the tympanic cavity or mastoid cells. It is, however, to be regretted that the temporal lobe and petrous bone had not been removed together and placed in formalin before it was attempted to trace the path of the suppurative infection. In the case first narrated the necrosed part of the petrous bone lay over the external auditory meatus, and in the earlier case it lay over the tympanum. In both cases the underlying mucous membrane was healthy, and it seemed probable that the bone was the primary seat of disease. The cases prove that necrosis of the petrous bone and temporo-sphenoidal abscess may exist when there is no otorrhea and the tympanic membranes are normal—a fact of great importance in diagnosis.

ST. CLAIR THOMSON.

A Case of Epilepsy Cured by Operation for Empyema of the Maxillary Antrum and for Polypi.—DR. WILLIAM GROSS-KOPFF.—*Archiv. fur Laryngol.*, Band III, Heft I.

The title is a brief abstract of the paper. The antrum was opened through the alveolar process. No epileptic seizure for three months.

VITTUM.

The Pathological Conditions of the Cranial Sinus.—T. S. KIRKLAND (Sydney, Austral.)—*Australas. Med. Gaz.*, June 20, 1902.

Kirkland, with the assistance of a pathologist, examined 100 cases post mortem, analyzing also the relationship between the disease producing the fatal issue and the pathological condition of the interior of all the sinuses: Highmore, frontal, ethmoid, sphenoidal, lateral middle-ear and mastoid.

The examinations cover a period of one year. During four months of that time an epidemic of influenza occurred, followed in a number of cases by a fatal form of pneumonia. Pneumonia accounted for 22 deaths out of the 100, and in no less than 11 cases were one or the other of the sinuses involved, viz., 50 per cent. The sphenoidal sinuses contained pus in eight of those cases, and in three cases clear fluid, so that 50 per cent of the cases dying of pneumonia implicated the sphenoidal sinuses.

Of the whole number of cases dying of various diseases in 35 per cent there was pus in one or other cavities. The percentage of cases occurring in pneumonia was 45 per cent and Kirkland thinks it justifiable to assume that the pneumococcus and its associates are actively instrumental in producing disease of the accessory cavities of the nose.

He mentions three cases of his own with the view of raising the question as to whether sinus diseases are ever the primary factor in producing disease of the lungs. He is sure that that suppurating disease of the upper respiratory tract is now and then the cause of serious disease of the lungs, and cites three of his own cases as proof.

Next in numerical importance came the ethmoidal sinuses, which were involved in 13 cases, 8 containing pus, and the others variously colored fluid.

The frontal sinuses were only eight times concerned in a departure from the normal.

Only four cases of suppuration were found in the maxillary antrum.

The sphenoidal cavities were involved in not less than 29 cases, 19 of which contained pus.

The author is inclined to think that the condition known as Thornwald's disease originates in the sphenoidal sinus, and that the pus seen in the region of the bursa of Thornwald is merely the pus which has trickled from above.

EATON.

A Method by which Deposition of Moisture on the Laryngeal Mirror may be Prevented without the Aid of Heat.—DOWNIE, WALKER.—*Lancet*, March 1, 1902.

An ordinary laryngeal mirror is taken, and after polishing it with a soft cloth the surface of the mirror is rubbed or pencilled over with le crayon anti-buee. This dulls the surface. The mirror is again wiped or polished with a soft cloth, and the surface will again be clear and bright. It may then be breathed upon without its brightness being affected. After being so prepared the mirror may be used for laryngoscopic examination, and it may be retained in contact with the palate or in any part of the buccal or pharyngeal cavities as long as may be desired, or, as is ever necessary, without the reflecting surface being affected in the slightest degree by the breath-borne moisture. The crayon causes no scratching of the glass, nor does its use interfere with the cleansing and sterilizing of the mirror. This method of preserving a clear, bright, reflecting surface will be found of great service under the following circumstances—namely: (1) in an examination to be made with electric light; (2) where a prolonged use of the mirror is necessary; (3) in examinations made away from home; and (4) in the examination of children whose timidity is so often increased by seeing the mirror held over the flame of the lamp before being used. Dentists may also find the “crayon” to be useful, and the eye-piece of a microscope may be kept perfectly clear and bright, even during a prolonged examination in warm weather.

(Note by Abstractor.—The “crayon” can be obtained from most of the dealers in motor-car accessories, as it is often used by automobilists.)

ST. CLAIR THOMSON.

The Edelmann “Galton-Pfeife.”—H. MACNAUGHTON JONES.—*Edinburgh Med. Jour.*, April, 1902.

The author gives a minute description of von Edelmann’s most recent Galton whistle and endorses the value of the instrument for estimating the presence of a labyrinthine affection.

A. LOGAN TURNER.

BOOK REVIEWS.

Lehrbuch der Ohrenheilkunde.—By PROF. DR. L. JACOBSON and DR. L. BLAU. Third revised edition. GEORGE THIEME, Leipzig, Publisher, 1902.

The third edition of this valuable treatise on diseases of the ear is before the profession. Much has been added to the earlier editions, especially in the sections on functional examinations; differential diagnosis; pneumo-massage of the middle ear; chronic suppurative otitis, chronic catarrh of the middle ear; the radical operation for the treatment of chronic suppurative otitis; the deaf and dumb, and cerebral complications of an infectious nature, together with otitic pyaemia and septicaemia.

The various eruptive diseases are considered in their relation to aural complications.

Considerable information of an unbiased nature is offered to the reader in this volume, as the authors have incorporated in their work the opinions and suggestions of other noted aurists. To appreciate the exhaustiveness of this excellent book, one has but to scan the index to read that the chapter on "General Therapy of Ear Diseases" is treated in twenty-six subdivisions. In the section on "Diseases of the External Ear," the various skin lesions together with other affections of the auricle and canal are carefully considered. Twenty-seven (27) pages are devoted to this subject. Manifestations of the "Eustachian Tube" are described in a more lucid manner than is customary with modern writers.

Affections of the internal ear, including Meniere's disease, involvement of the auditory nerve, cerebral deafness and labyrinthine disturbances during intoxication are given considerable attention.

The various forms of cerebral extension, sinus and jugular thrombosis, otitic pyaemia and septicaemia are discussed in detail.

The numerous modifications of the radical mastoid operation are described with illustrations. An entire chapter is given diseases of the nose, pharynx and naso-pharynx, and their influence upon aural affections. Three hundred and forty-five illustrations, nineteen plates, including instruments, methods of examination and treatment, and pathological and anatomical descriptions are appended to the text. The only objection that may be offered is the small size of the type in portions of the book.

M. D. L.

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ORIGINAL COMMUNICATIONS.

(Original communications are received with the understanding
that they are contributed exclusively to THE LARYNGOSCOPE.)

CHORDITIS CANTORUM. A CONTRIBUTION TO THE STUDY OF THE ETIOLOGY, PATHOLOGY AND TREATMENT OF SINGERS' NODES, OR NODULES ON THE VOCAL CHORDS.

BY F. E. MILLER, M.D., NEW YORK CITY.

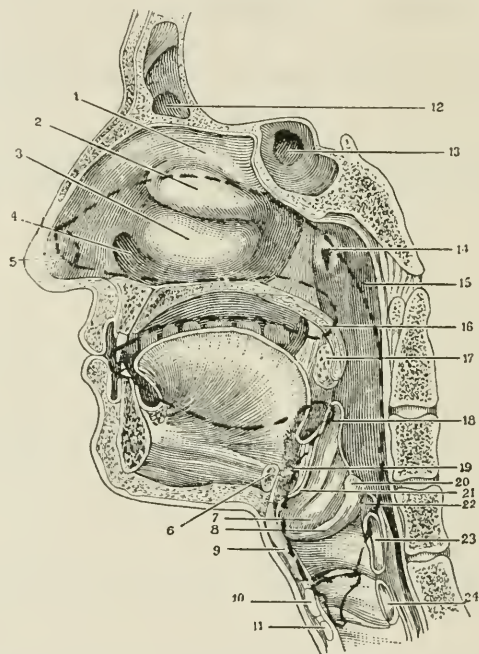
In my paper on "Observations of Voice and Voice Culture" presented in 1898, I made the statement that "the action of the pharyngeal and nasal cavities, or hollow spaces, is prior and anterior to the action of the vocal bands, for the rest of the voice, showing that we need for tone and overtone production, quality, pitch and amplification, something more than a mere action of the vocal cords in order to produce tone properly."

In my present essay I shall proceed to take up certain mooted points which have been brought to my attention as a result of further observation and study of this object under traumatic conditions.

A well-known singer, who was not able to retain pitch, and had a break at F sharp, and whose voice after attempts at phonation broke, forming a node between the anterior third and thyroid end of the vocal cartilage, proved to me that a blow struck on the side of the larynx and injuring one of the exterior or extrinsic muscles of attachment, is capable of producing a certain and specific injury at a point on the vocal cord within. This fact completely overrules the contention of authorities who maintain that a node cannot be formed at a point farther up in the cord than the anterior third.

The study of this injury has proved so interesting to me, and has

brought out so many points in further knowledge of the mechanism, that, upon the invitation and with the approval of your president, I have determined to lay them concisely before you, and to illustrate them with the assistance of one of the best known experts in vocal anatomy, Miss Dora Louisa Topping, who is capable of demonstrating by separate or collective muscular movements the points to be laid before you.' In one sense these points are not new. Attention has been called to them by one of the most learned vocal anatomists of modern times, John Howard, and since his research



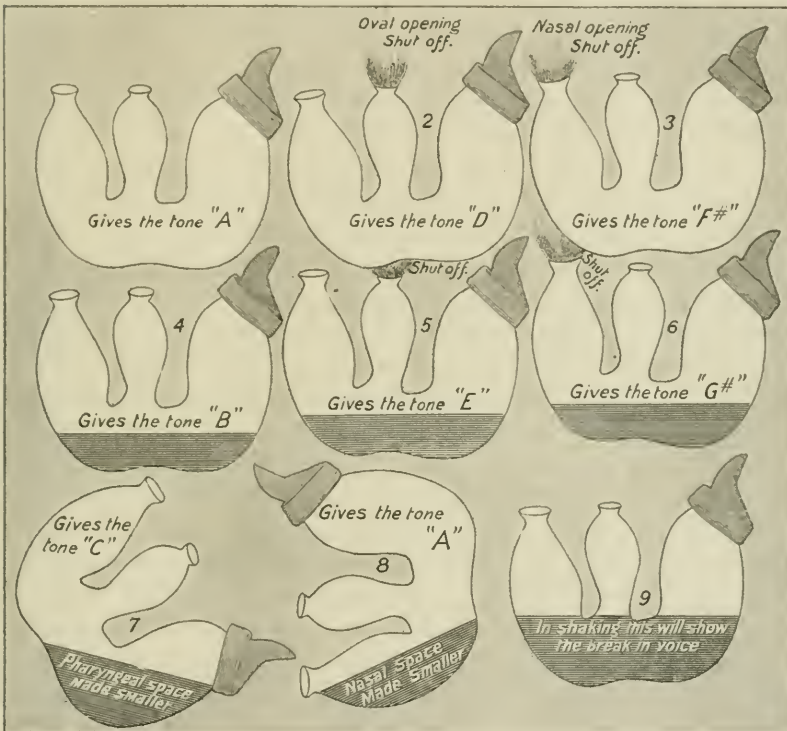
A scheme showing the hollow spaces of the parts above the glottis that are under control.

no one has ever added materially to the conclusions he reached. His work in the dissecting room and power of devising exercises of muscular control are without parallel.

My first step will be to show you certain relationships existing between the physics and anatomy of the voice most essential in forming change of pitch, quality and overtone. Your attention is directed to the three hollow spaces—nasal, oral and laryngeal. Nasal, from the tip of the nose to the base of the soft palate; oral, from the lips and teeth to the top of the larynx; laryngeal, the

chamber containing the larynx itself. The action of these hollow spaces has much to do with the modification and modulation of the voice.

In a former article I described some apparatus which I devised for the purpose of showing the effect that the separation or combination of these hollow spaces has upon the sound produced. Here is a glass vessel (indicating) with three openings, two covered with rubber. I whistle one tone (illustrating), press one rub-



ber about half an inch inward, and you notice an increase in the height of the pitch. (See "Observations on Voice and Voice Failure," by Frank E. Miller and H. Theodore Wangeman). I now pour water in the vessel and produce a similar result. I will hold the water in the vessel over the rubber, which I will press to some extent, and you will observe hardly any change in the pitch of the tone. (This latter feature being an interesting physical fact, you recognize from this experiment the useful functions of the converging loops which unite about the uvula, making it possible to

change three or four half tones while hardly changing the aspect of the hollow spaces.) These three hollow spaces seem, more than all other hollow spaces of the vocal organs, to be capable of being controlled by their own surroundings.

Here is another vessel, shaped to imitate closely the three hollow spaces. I pour one-third of an inch of water into this vessel, and by giving to the same three or four different positions I change the pitch from three to four half-tones. You will observe that the hollow spaces in total must remain stationary, and the only change I make is, turning a little more or less water from a supposed nasal into a laryngeal cavity.

I will repeat this experiment with different quantities of water. Another vessel, with two openings, but having a different form of hollow space, will show that a whistle can be blown so as to produce vibrations at either opening. Both openings are the same size, yet they give two tones of different and distinct pitch.

Here is still another vessel, closely resembling the three most prominent hollow spaces, which happens to be tuned to the three tones of the D cord. I connect a penny whistle of a very high, shrill note to the laryngeal part, as indicated in the chart, and shall use the vessel as illustrated in the different pictures, Nos. 1 to 9.

Here in Fig. 9, are shown the breaks of the voice; in Fig. 7, change in the pharyngeal space; in Fig. 8, change in the nasal space, which I demonstrated to you on the glass vessel.

The break of the voice, as shown and demonstrated in Fig. 9, is most interesting, as it shows how an unhealthy condition of the mucous membrane, or, by muscle action, the break in the voice may appear. While its practical value is just as the discovery of the North Pole would be, it demonstrates the correct action of air vibration and tone formation in these hollow spaces, which I will further show you in another glass vessel, with three hollow spaces tuned to tones close together in pitch. When I blow here (No. 2) softly, I make the middle space sound, while, with a harder blast on the whistle the end space vibrates two distinct tones higher, omitting the air vibrations in the middle space, and vice versa.

You are well aware that muscular action in the hollow spaces will draw the surfaces and form different shapes and sizes for each new pitch, and in a thousand different ways.

From a series of careful observations upon the action of mucous

membranes during voice production made by Madame Anna Lan-kow, an authority on vocal production, Mr. A. T. Wangemann, formerly chief physicist of Edison's Laboratory and myself, we came to the conclusion that these hollow spaces are to the vocal bands what the violin is to the strings, and that for every tone and vowel the mucous membranes of the hollow spaces must be drawn into a special position (including the position of the larynx) before the air in such hollow spaces can be brought into vibration by the action of the vocal bands. These vibrations of the air are the tone. On the other hand the vibration of the cords alone are never the tone. The surfaces of the mucous membranes are drawn into different shapes, particularly fit to produce tone-waves or to disturb them, and to produce in such tone-waves not only fundamental tones, but over-tones also.

Mr. A. T. Wangemann advanced the argument that when this is so the hollow spaces in order to produce a 16-foot bass tone, would have to form a tube of 16 feet, is at present without foundation. He can show "Koenigs-flames," where a resonator which ought to show 512 flames per second, under certain circumstances, shows only 256, 128, etc., vibrations per second. And he contends that when this is possible in a bass resonator, it is all the more true when it occurs in a hollow space, containing living membranes, nerves and muscles.

I remarked above that the hollow spaces remain in total stationary; that the changes made in such numerous ways form the changing of the space boundaries. This leads us to look deeply into the mechanism of these boundaries and find, if possible, the laws which govern their action.

Starting with the walls of the upper pharynx or nasal space, we find the back wall supported by a strong contractile muscular sheet called the "superior constrictor" muscle, while the front wall is formed by a union of the levatores-palati, (palate lifters) and tensores-palati, spreading from the uvula over the soft palate, to pterygoid plate and petros bones, and either singly or together being simple to train and control. Extending downward from the uvula, starting from the hard palate and levatores-palati are the palatopharyngei muscles, which form the inner arch seen back of the tongue on opening the mouth. These fasten directly to the upper posterior horns of the thyroid cartilage—the part of the larynx containing the vocal cords. ,

The middle or "oral" space is bounded by the superior constrictor at the back, the support mentioned above, over-lapped by the middle constrictor (the latter not being essentially a voice muscle), while the cheeks, lips, teeth, hard palate, palate to tongue and palate to larynx muscles form the sides and front of the space. The tongue is a large and direct agent in formation here, as it is connected directly with the upper part of the larynx. Its derangement in action being alone sufficient to utterly destroy tone, or, on the contrary, when well adjusted and hanging normally in relation to the other voice parts, it gives what is termed, the silvery quality to the voice.

The lower or "laryngeal" space is bounded by the walls of the larynx and spine, and is regulated by the movements of the muscles attaching directly to the larynx parts.

The boundaries of these hollow spaces form a connected chain of the muscle and nerve supply which, with every vocal movement, must do a certain and definite amount of work.

The will calling for speech or song sets them into action, and there must be a harmony of action throughout the whole if we would secure normal results.

The case of the growth of a node on the vocal band caused by a blow on the outside of the larynx, over the sterno-thyroid muscle, has led me to conclude that the agencies governing the hollow spaces and holding the larynx in position have not been sufficiently understood in their relation to the direct workings of the inside action of the larynx.

It has always seemed to me that the present theory of the mode of production of nodes is insufficient, as well as mysterious.

Dr. Charles H. Knight, in his article, "Vocal Nodules," read before the American Laryngological Association last May, makes the following statement: "The confusion and disagreement prevailing as regards nomenclature and pathology apply to nearly every question bearing on this subject, partly it is believed, in consequence of failure to differentiate the lesion." From observation of various cases he has arrived at the conclusion that wrong action of the extrinsic muscles and any mechanical obstacle to the emission of voice are the chief causes of such growths.

Explaining the formation of a node by the mechanical effect of an interference of the vibrating segments of the vocal cords is insufficient, because, up to the present time no definite conclusion has

been reached as to how the vocal bands vibrate for tone and overtone production, and as to what effect the action of the extrinsic muscles have upon the vocal bands.

In order to place ourselves in a proper position to study the etiology of nodes on the vocal cords it is necessary,

1. That we know the physics, the anatomy and the physiology of what is recognized as a good method of voice production.
2. The pathology of the node and of the perinodal tissue.
3. That the case under observation have a general reputation for correct singing.

I will not go into the full relation of the physical laws of the anatomy and physiology involved in voice production, that being beyond the scope of this paper, but there are certain points I wish to make because of their importance and of their direct bearing upon the subject.

(a) The hollow spaces—nasal, oral and laryngeal—are quite as important in producing the modifications and modulations of the singing voice as are the vocal cords and the intrinsic muscles of the larynx.

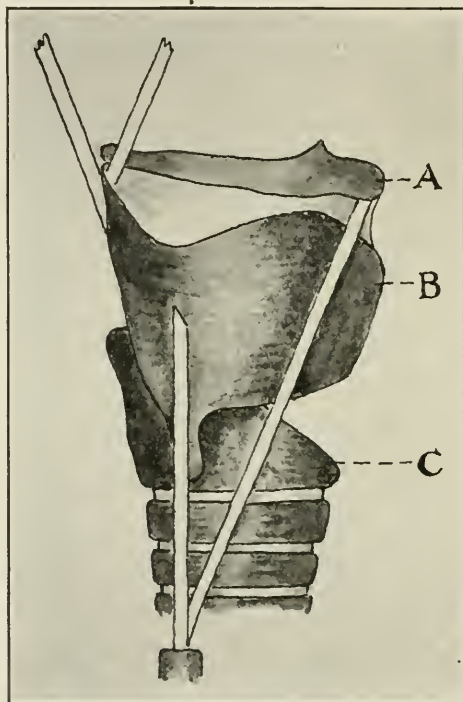
There is no doubt that the movements of the larynx depend upon and are controlled by the muscles and movements outside that organ.

By means of charts I will now demonstrate to you as clearly as possible the relation of these parts and how the principal extrinsic muscles are capable of voluntary control. Bear in mind, as I show you these points, that the boundaries of the three hollow spaces extend from the larynx to points on the skull, at the upper end of the nasal space, and that since each succeeding higher tone of the voice demands greater resistance, for greater breath pressure, there is a constant contraction of the walls of these chambers through the entire upward range of the voice, likewise a relaxation through the descending range. These muscles, as before stated, can be controlled by voluntary action. The change for each successive pitch is so slight that our senses scarcely detect it. With the establishment of correct relationship of parts, and a use of proper breath supply, the need for voluntary control ceases.

The key to efficient results seems to lie in the regulation of the hollow spaces by the control of their boundaries. We know that with this regulation comes pitch, amplification, quality, in fact all the desirable voice requisites. We, as workers on the human voice, cannot expect to eradicate difficulties, add new beauties or

produce artistic results unless we understand the mechanism of the vocal instrument. We can better prove our results by a tangible mechanical method, and in order to decide the questions of voice failure we must understand its action.

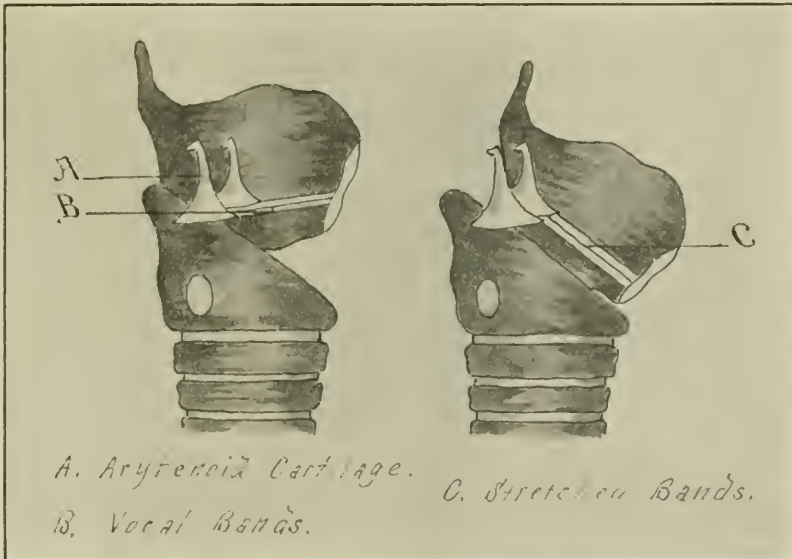
Here we take up the voice synthetically: 1. Let us look at the larynx, with its holdings. I will show you from the cut the action arising from harmonious relation of the parts.



[A. Hyoid Bone. B. Thyroid Cartilage. C. Cricoid Cartilage.

The hyoid bone lies at the top of the larynx to which the tongue attaches above. The thyroid, or shield-shaped cartilage, below, contains the true and false vocal cords. The cricoid cartilage is below this, setting directly on the rings of the trachea. It is wide at the back and rests close to the spine, the normal position being at the fifth cervical vertebra. At this point on the spine the longus colli muscles, in which the front part of the spine is embedded divide, allowing the cricoid cartilage to lie close to the spine, giving contact with the bony frame of the body.

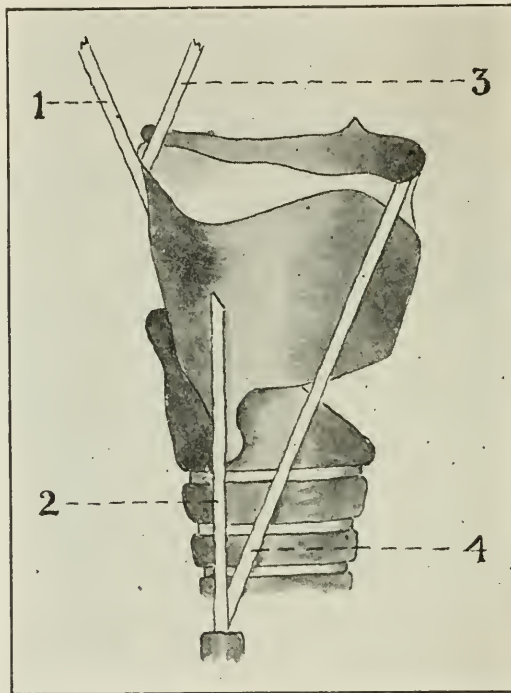
Here appears a vital point in our tone production. From transmission of laryngeal vibrations to bone we derive a great amount of tone resonance to retain which throughout the entire range of voice the cricoid cartilage must keep its position at this point. Lapping around the cricoid cartilage, and fastening into a slight socket on each side of it, passes the thyroid cartilage. Inside this, and about half way up at the angle in front, start the true vocal cords. They pass backward, a muscular shelf-like mass, growing to the sides of the thyroid cartilage, to fasten to the swinging pyramid-shaped arytenoid cartilages which are held to the upper, outer borders of the cricoid cartilage at the back. Keep well in mind that these cords are fastened to a movable point in front, and indirectly to a fixed point at the back.



The office of the arytenoid cartilages is that of swinging together at phonation and approximating the vocal cords. This action does not supply varieties of pitch, so we must look elsewhere for our adjustment of tension and stretching of the vocal bands. The stretching of the vocal bands depends upon the swinging of the thyroid cartilage forward on the cricoid cartilage, making the distance greater from the depressed front of the thyroid cartilage to the stationary arytenoid cartilages at the back. In order that regular tension may be observed throughout the range of voice

this process must go on gradually, and the point be fixed on which the thyroid cartilage swings. (See Chart same as No. 2).

From the posterior border of the thyroid cartilage passes a muscle, the stylo-pharyngeus, to the styloid process, a point on the temporal bone directly under the ear. The action of this muscle pulls the larynx up and backward; while the sterno-thyroid, from an oblique line on the side of the thyroid cartilage to the posterior surface of the sternum, or breast-bone, holds the larynx down.



Muscles of fixation: 1. Stylo-pharyngeus. 2. Sterno-thyroid.
Muscles of cord stretching: 3. Plato-pharyngeus. 4. Sterno-hyoid.

The combined action of these two forces pulls the larynx back against the spine and keeps the cricoid cartilage firmly fixed against it. Having the larynx in a fixed position, we pass to the chain of muscles which swings the thyroid cartilage on the cricoid cartilage, gradually closing the crico-thyroid niche and stretching the vocal cords for their various degrees of tension. This swinging of the thyroid cartilage changes the boundaries of the pharyngeal spaces

throughout the voice range. The palato-pharyngei muscles, extending from the upper posterior edge of the thyroid cartilage to the uvula and soft palate, pull the thyroid cartilage up and forward, the levator palati rising from the uvula to the petros bones above, continue the upward holding of palate to larynx muscles. The sterno-hyoid muscle, from the body of the hyoid bone in front, and inserted below to the inner extremity of the clavicle, sternum and first rib, pulls the anterior portion of the thyroid cartilage downward.

The combined efforts of the palato-pharyngei pulling up and forward, with the sterno-hyoid pulling down and slightly backward, swing the thyroid cartilage in its socket on the cricoid cartilage and stretch the vocal cords which lie within. (See Cut No. 4.)

We have now analyzed the actions and movements which result in the fixation of the larynx. This gives to the tone great resonance, and insures evenness and breadth of quality throughout the range of the voice. We have also analyzed cord stretching, which insures perfection of attack and spontaneity of delivery. The control of the motive power, THE BREATH, is of the utmost importance in maintaining the fixation and cord stretching of the vocal mechanism. When the breath is not properly applied, the correct action of some part or parts of the voice machine must be disturbed, with consequent trouble. The jaw and chin muscles are usually the first to become disarranged. With derangement come varied forms of faulty tone production.

The next point to require our attention is that the action of these spaces is prior to the action of the vocal bands.

While the vocal cords and the action of the larynx during exhalation (air being forced through the cords by the action of the diaphragm, other expiratory muscles and the pulmonary tissues), provide the initial forces for the proper number of vibrations per second for any given tone, and while they probably, by nervous and muscular action, influence to a great degree the beginning of the tone and overtone vibrations for its quality and timbre, yet, without the cavities being drawn into absolutely perfect spaces of the size and form required for that special tone, the production of almost any tone would be impossible.

To illustrate: If you sing the vowel "ah" on the tone of "C" and again the same vowel on the tone of "E," and if now, by will

power, you hold the tongue and all the cavities in the position necessary for the tone "E" while, with the larynx, you try to vibrate the "C" you will obtain as a result, a dismal failure—hardly even a grunt.

One more experiment which will show you after a few trials that the above stated action of the hollow spaces is the correct one.

1. Use your larynx open for breathing without making any tone whatsoever except the necessary sound of air passing.

2. Draw your cavities and hollow spaces slowly into position as if you were uttering the vowels a, e, i, o, u, (as pronounced ah, a, e, o, oo), one after the other, and do all this without any special effort.

3. Observe carefully and listen to any possible slight tone sound which may be developed while whispering the different vowels. This tone naturally would be only a whispering sound and not a loudly ejected tone.

The result will be that you find the whispered tone on e from four to six half tones higher than the tone produced on a. The whispered tone on the vowel i is again from four to six higher than the one on e.

Uttering the vowel o, you perceive the tone goes in pitch below the one of our original a, while the sound on u is very near the one of our original a. All this may vary somewhat in pitch in different people, but the absolute change in pitch of vocal sounds, when whispered without effort to hold the pitch, is true in every person.

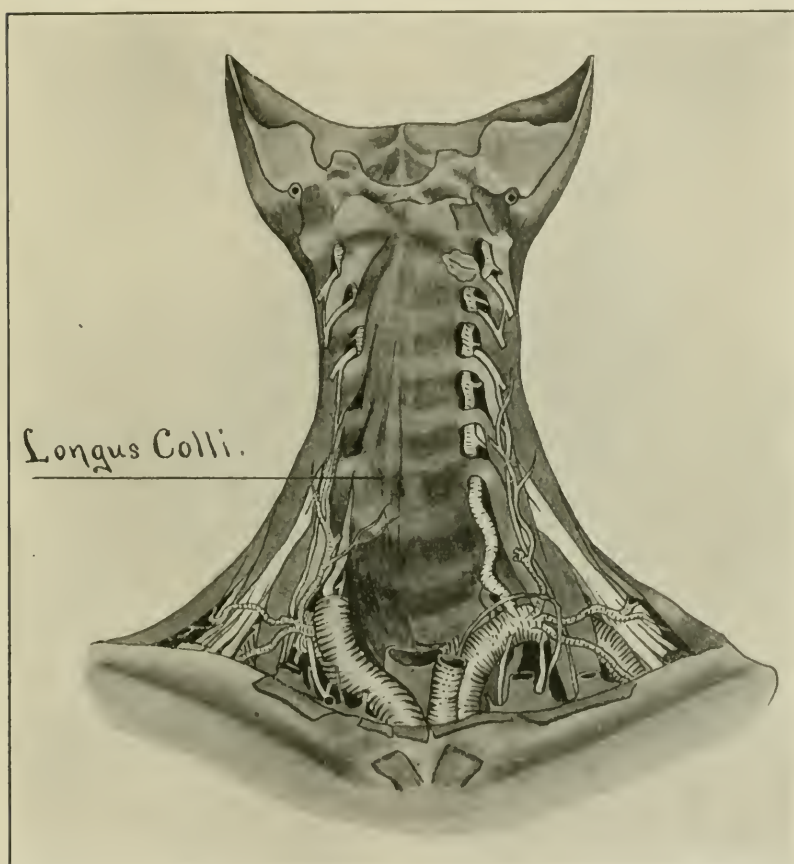
This I hold to be proof that the three or more hollow spaces in whose changes the utterances of vowels must be based by their function of shaping these spaces, produce a change of pitch without any action on the laryngeal part, and therefore as a necessary result, the different changes in our hollow spaces must force laryngeal action to conform with any pitch started in such of the hollow spaces as may be in action for tone or articulation.

The perfect action of these hollow spaces requires the proper co-ordination of the extrinsic muscles of the larynx. In order that the muscles regulating the boundaries of the hollow spaces may properly perform their function through the range of the voice, the larynx must first be fixed.

The separation of the longus colli muscles permits the cricoid cartilage to rest close to the spine at the level of the fifth cervical vertebra.

The stylo-pharyngei, passing from the posterior border of the thyroid cartilage to the styloid process of the temporal bone, holds the larynx up and back, while the sterno-thyroid, going from the oblique line on the ala of the thyroid cartilage to the posterior surface of the sternum holds the larynx down.

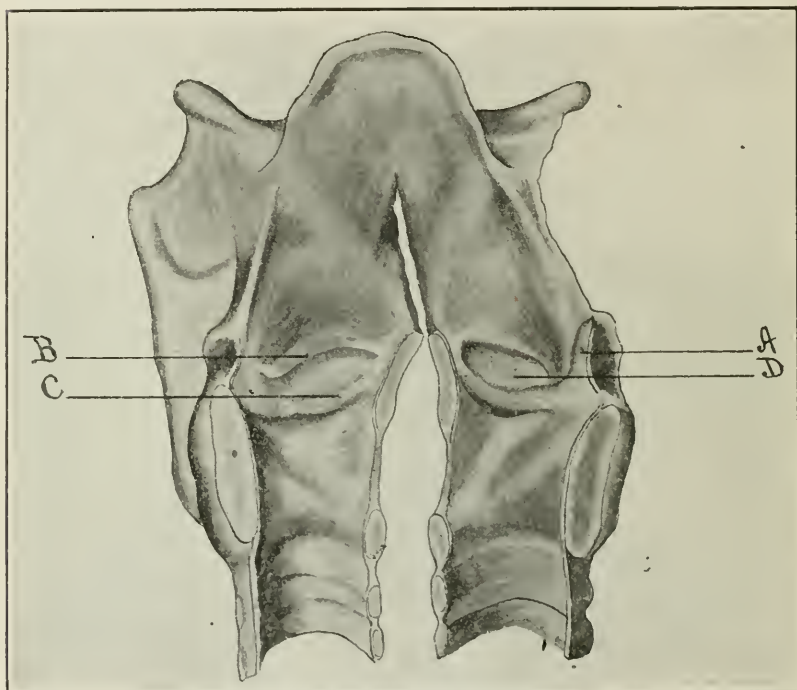
The combined action of these muscles fixes the larynx at the



point above mentioned—opposite the fifth cervical vertebra. From this combination of muscular force and position is derived the greatest possible chance for amplification and resonance of the voice, for the vibrations are transmitted to the bony framework of the body.

From the lowest pitch of the voice, preparation is made by the muscles for cord stretching, the swinging of the thyroid cartilage, which gradually closes the crico-thyroid niche. At F, as a rule,

(first space treble cleft; one octave lower in male voice), the cartilage begins to move downward. At F above, laryngoscopic observation shows a sudden dipping downward of the arytenoid cartilages at the vocal cord attachment, and consequent lengthening of the vocal cords. This holds and continues together with increased intrinsic effect. At the high F the crico-thyroid niche is closed and cord stretching has reached its limit. The tones above this F are then produced by increased tension on the larynx holding



A. Arytenoid Cartilage.
B. False Vocal Cord.

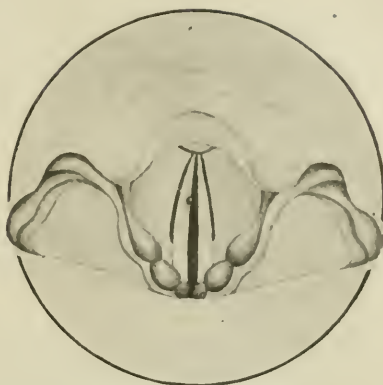
C. True Vocal Cord.
D. Ventricle.

muscles, and also increased tension of the inner larynx muscles, to overcome the greater breath pressure demanded in producing the higher voice. By the increased action of the intrinsic muscles, the vocal cords are gradually thinned throughout their entire length, giving narrower vibrating edges for each succeeding higher tone, similar to those used in the violin. (Chart 12.)

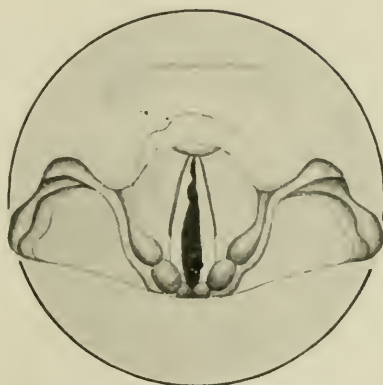
I trust I have made it clear to you that from the lowest to the highest point in the voice there is a gradual closing in action tak-



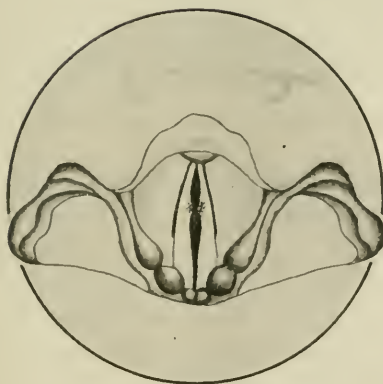
Cut 8. Normal condition of vocal cords.



Cut 9. Singer's node.



Cut 10. Double Unilateral Node.



Cut 11. Double Bilateral Node.



Cut 12. F sharp, C sharp, B flat and G sharp Nodes.

ing place, not only inside the larynx, but throughout the hollow space boundaries; and only by a harmonious action of the two (intrinsic and extrinsic) efforts can the best results be obtained.

On raising the voice from pitch to pitch we find the first break occurring in the region of the dipping of the thyroid cartilage downward at F, consequently I use the scale from E to F sharp above, as showing the most glaring voice faults, always finding them within this range. This fact shows that unless the middle or cord-stretching portion of the voice is normally entered upon, disaster follows. I will now proceed to show you some of the results of faulty condition, together with their causes.

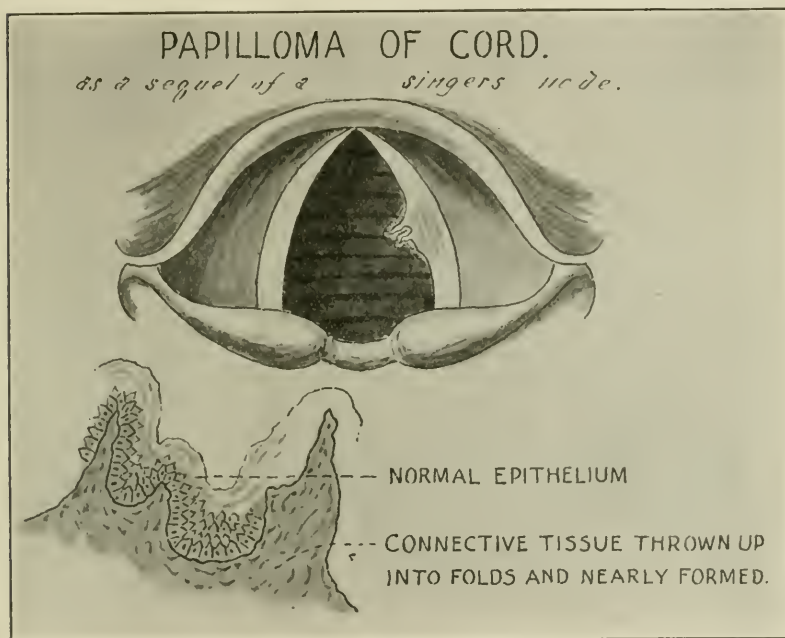
Since the action of the extrinsic muscles of the larynx governs the production of the scale in the middle and most useful part of the voice, from E to F sharp, just where we find nodules or inflammatory swellings excited on normal tissues, any failure of harmonious action of these muscles may produce nodes on the part of the vocal bands which these muscles control. I have seen nodules occurring, causing vocal collapse at F sharp and C sharp, B flat, G sharp. The muscles and mucous membrane of the hollow spaces seem first to be affected, and their sicknesses are reflected to the vocal bands in a peculiarly unique and systematic manner, enabling the physician to locate some of the troubles in the singer's hollow spaces from the appearance of the vocal bands.

From this observation I find the frequency of nodes to be in the following order: (1) C sharp; (2) G sharp; (3) F sharp; (4) B flat. These keep a relative position in ascending the scale, showing that the tension and increased muscular energy that is brought to bear in the hollow spaces while singing the upper tones create a corresponding effect upon the vocal cords, from their arytenoid to their thyroid end. In other words, the higher the break in the voice, the more anterior the development of the nodes on the vocal cords.

In diagnosing I have adopted the following method. The patient is to take a position opposite the examiner. The E to F' scale is to be used, the patient singing the scale in single notes. This, it will be noticed, brings in G sharp and C sharp, which are vital points in the changing of the hollow spaces. Should the voice break at either point we will know whether the injury exists at the junction of the tongue with the pharynx, or with the epiglottis; or whether this has been severe enough to cause a node at G sharp. By this

break I mean, in a cultivated singer, the perceptible change of voice is the timbre. I do not mean a change in the register of the voice. Should the break be at C sharp I believe there is a possibility of some injury in the region of the soft palate, in the pillars of the pharynx, at the base of the tongue or some follicular enlargement which interferes with the reflexes in the posterior walls of the pharynx.

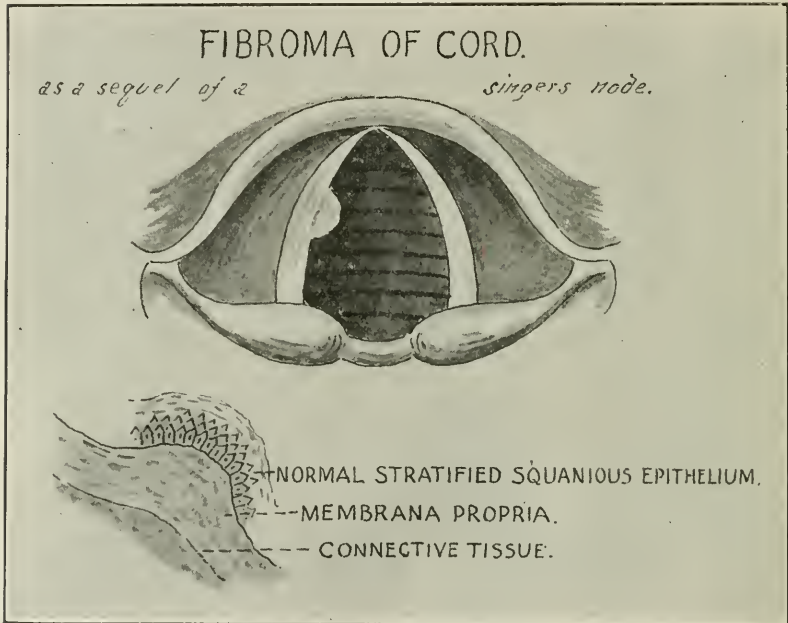
Should there be a blowing or gasping sound down the scale between G' sharp and E, I look for thickening of the arytenoid or inter-arytenoid spaces. Should this be a high voice I try it on the



G sharp scale, and should the voice be unable to reach the position on the scale above G' sharp, then there is some difficulty with the pharynx—perhaps a post-nasal growth or secretion which has interfered with the muscles of the soft palate. Should the quality of the high G' sharp be forced, then the patient should be directed to sing through the nose, and if there be any inability to produce nasality, by pinching the nose to get the interruption of sound, we know that there is some growth, or some constriction of the cavity or calibre of the nares interfering with the auxiliary hollow spaces of the nasal cavity.

To resume, disturbances in the higher resonator chamber, (nasal cavity), reflect themselves on the anterior part of the vocal cords. A lack of proper use of the post-nasal cavity will cause irritation or nodes, and if they be produced, they will occur on the anterior portion of the cord.

Disturbances in the middle, or oral, hollow space reflect upon the middle of the cord. In the lowest hollow space the same principle exists to create disturbances in the posterior ends of the cords, especially if anything interferes with the normal position of the larynx on the spinal column.

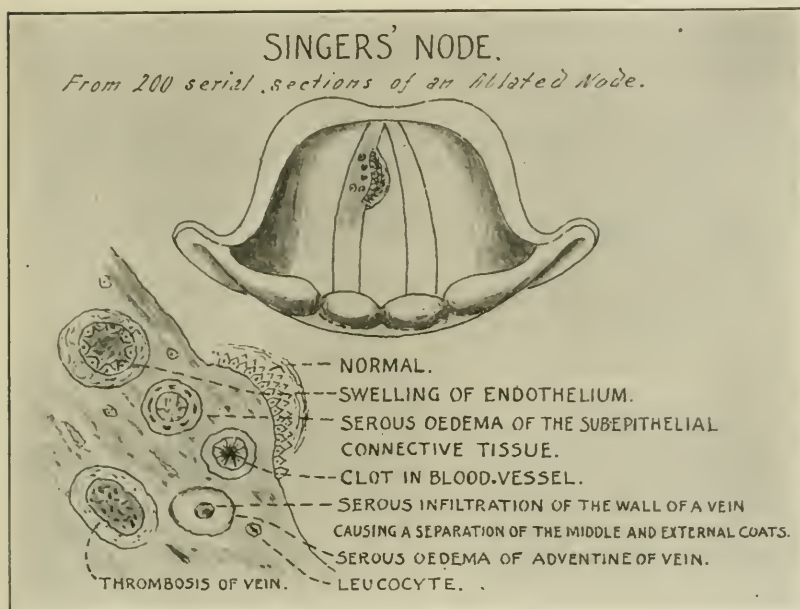


In arriving at the cause of nodes and nodules it is necessary to study the injury to the vocal bands microscopically so as to get at the nature of these injuries. In every case it is found to be from trauma, or mechanical injury and not the result of a disease. Consequently the injury is a reflected one, inasmuch as it does not arise from inflammatory condition of their own tissues. This is stated because many authorities assert that nodes of all kinds are of tubercular origin.

Dr. John Larkin's pathological study (worked out under my suggestion), shows that these conditions are nothing but inflammatory swellings excited on normal tissue, which should never be

removed, because, following the laws of inflammation, they can be absorbed without any change to the tissue involved. (Cut 15.)

In the case of a node removed and given to Dr. Larkin, the following report is given: Serial sections were made, in all about two hundred, and stained in various ways. The epithelial covering of the vocal cord is perfectly normal, and shows no separation from the underlying tissues. The superficial strata of the epithelium is, however, a little compact, possibly made so by constant and severe



use. The most noteworthy features are to be found in the sub-mucous tissue of the cord proper. Here the tissues are widely separated by what appears as a fluid oedema, a few, but not many leucocytes, fibrin, in compact masses here and there, mostly at the base of the section. The examination of the blood vessels in this section is most important and noteworthy, and the changes found will be described briefly.

1. In the smaller veins the endothelial lining is exceedingly rough; the cells are swollen, some free in the lumen. The protoplasm granular and some places not staining; in others, having small particles of fibrin and leucocytes hanging to the highest part.

2. Many of these veins are partially occluded by parietal throm-

bi, as yet unorganized, and composed of fibrin and leucocytes in the mesh.

3. In other veins the thrombosis is more marked. The lumen is twisted and tortuous and the adventitious coats of the vessel are swollen with oedematous fluid.

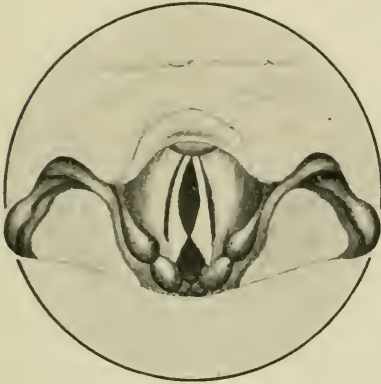
4. In still other vessels the lumen is entirely occluded by fibrinous thrombi, and it is here that one can make out a very early phase of the organization of the thrombus; small, round and slightly elongated cells can be seen pushing their way into the fibrinous nidus until in a few vessels we have the lumen entirely occluded, and the fibrinous thrombi now being replaced by a connective tissue hyperplasia.

Under the microscope one would not call this a true inflammatory condition. It is a process that has necessarily taken weeks to complete, but even the fact that we have nodes here due to the thrombosis of smaller veins, and resulting oedema of tissues, would hardly be a cause for the extirpation of the vocal cord. There is every probability that by rest the circulation of the vessels would again be restored, that oedema of tissues subside and functions return. Such knowledge as this must aid greatly in teaching the laryngologist what to do and what not to do.

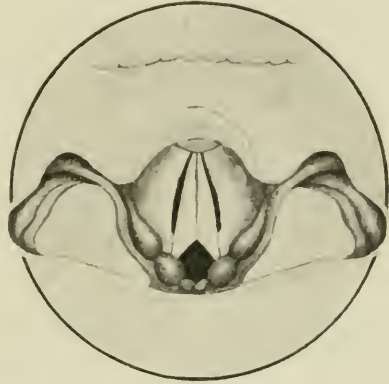
In this specimen presented by Dr. Larkin, the singer was advised by myself the year before not to have the node ablated, but visiting a noted specialist, at the advice of a friend, without the consent of the patient, the node was removed, with the result that the singer's voice is now entirely changed. Where he had a deep, fine baritone voice, with a range from A flat below to A flat above, he now can sing only from C to E, and the voice quality very much impaired. He has been compelled to resign his position in consequence.

Another examination given by Dr. E. E. Smith, shows the node specimen as a small bit of tissue of irregular shape, scarcely 1½ millimetres in longest diameter. Sections of the growth reveal a superficial layer of stratified, squamous epithelia covering the entire surface and extending to an average depth of one-tenth of a millimetre. It is impossible to distinguish any definite basement membrane. The stroma immediately underlying, is a fibrous connective tissue which, in the centre, is largely replaced by bundles of elastic tissue. The specimen presents, therefore, much the same appearance as the true vocal cords, and is to be regarded as a simple hyperplastic growth. This young lady, a high soprano,

where the node was very small, about the size of a pin's head, was removed by myself with the result that her voice, which was breaking at C sharp constantly, was restored for the period of an hour after its removal; but the next day she was voiceless, and remained so for two weeks. At the end of a month her voice was in very good condition, and at the end of three months was absolutely restored and better than ever before.



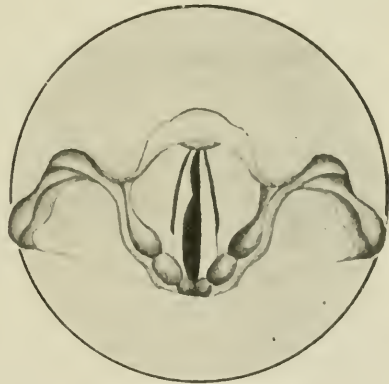
Cut 16. Paralysis of the Thyro-Arytenoids and Arytenoids.



Cut 17. Paralysis of the Arytenoids



Cut 18. Paralysis of the Thyro-Arytenoids.



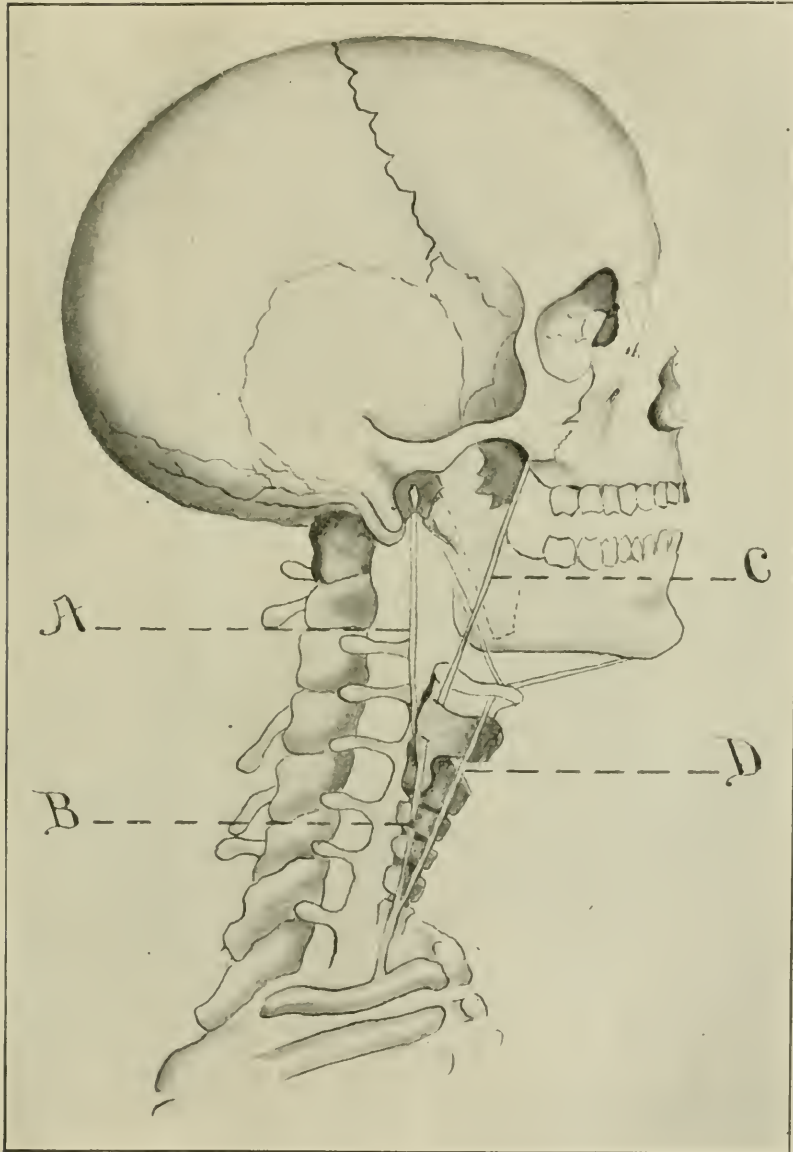
Cut 19. Paralysis of the Right Thyro-Arytenoid as a sequel of a Node.

A scheme of the pathology of a nodule from a vocal cord resulting from the study of 200 serial sections of a large organized node of a year's growth.

While observing the clear-cut picture presented by an arytenoid paralysis, I was reminded of some conditions which arise from the position of the cord, due to nodes where a similar condition ex-

isted at the thyroid end of the cord. It is this condition which has induced me to believe that extrinsic muscles exert their influence upon the cord and that it assumes this paralytic look due to some weakness of the extrinsic muscles. In other words, the force exerted by these muscles has changed the centre of resistance, raphe (if you choose to term it), at its centre, or as I am accustomed to term the centres of mechanical resistance on the vocal cords. For instance, in paralysis of the arytenoideus this point will be found at the apex of the angle formed by the border of the paralyzed cord. These centres of mechanical resistance always show thickening and bulging, if the paralysis is temporary. If the paralysis is permanent, the thickenings are absorbed, atrophied, and the point rounded off. As vocal nodules occur at other points than can be explained by paralysis of the intrinsic muscles, we must look elsewhere for the explanation of their appearance. When we study the location of the hollow spaces and their division by a chain of muscles that produce cord stretching and fixation, with swinging of the thyroid cartilage for about one octave, we see that the muscles in action are all extrinsic, and not intrinsic, and govern the voice throughout its range, causing the intrinsic muscles to become adjusters of the cords and regulators of the different air currents that pass through the glottis, producing through the position of the larynx upon the spine, a wonderful power of amplification of sound, also of doubling currents at the glottis, whereby the means are furnished to double vibrations in the hollow spaces of the voice, causing a wonderful production of tones, phenomenal for pitch and power, as well as for subtile quality. From this, it will be seen that we must have a standard of production of tone, which will satisfy the physiological laws of voice production. In order to clearly understand the physical derangements which I am going to show you, as productive of nodular growth, let me present the vocal instrument first in its normal and correct position; its position on the spine, with the cord-stretching effect caused by swinging the thyroid on the cricoid. From the styloid process under the ear to the upper horn of the thyroid cartilage pass the stylo-pharyngei muscles. Opposing these in action are the sternothyroid muscles, from the side of thyroid cartilage to the sternum. The action of these two muscles, one drawing up and back to the ear, the other down to the sternum, tends to pull the larynx back against the spine. When this function is correctly established, the

larynx lies at the fifth cervical vertebra where nature has provided a place of repose, by separating the longus colli muscles at this

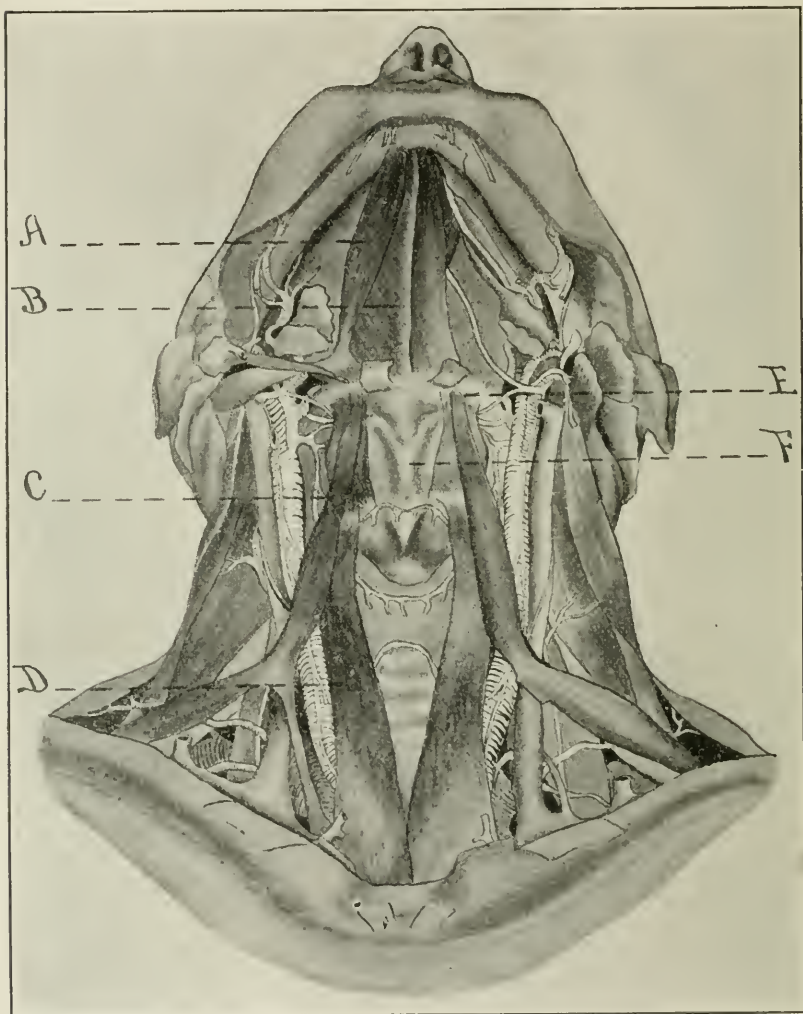


A. Stylo-Pharyngeus Muscle.
B. Sterno-Thyroid Muscle.

C. Palato Pharyngeus Muscle.
D. Sterno-Hyoid Muscle.

point. From the close contact of vibrating larynx with the bony

frame of the body we derive the finest tone resonance the larynx being fixed by the efforts of these two pairs of muscles. I will now show you the action of cord stretching. From the upper horn of the thyroid cartilage to the points about the uvula pass the palato



A. Digastric-Hyoid bone to chin muscle. D. Sterno-Hyoid from Hyoid bone to sternum.
 B. Mylo-Hyoid bone to chin muscle. E. Hyoid Bone.
 C. Omo-Hyoid from Hyoid Bone to shoulder. F. Thyroid Cartilage.

pharyngei muscles which, in turn, are held up by the levator palati to the petrous bones on the skull above. Opposed to these upward and forward-pulling muscles we have the sterno-hyoid pulling down

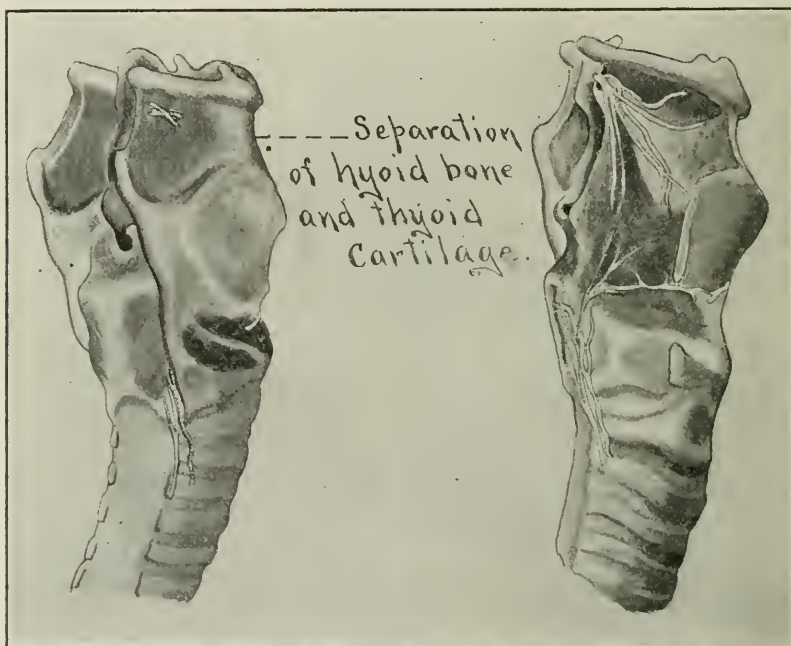
to its fixed end at the sternum, swinging the thyroid cartilage forward on its socket on the cricoid, thus stretching the vocal cords which are fastened to the angle of the thyroid cartilage in front



and indirectly, through the arytenoid cartilages to the cricoid cartilage at the back. This swinging of the thyroid cartilage takes place through one octave of the voice, for the stretching of the

vocal cords. Node formation is found to occur within this octave. Bear in mind that fixation and cord-stretching are the normal efforts through the whole of the voice range, and everything interfering in any way with this action causes derangement in tone formation.

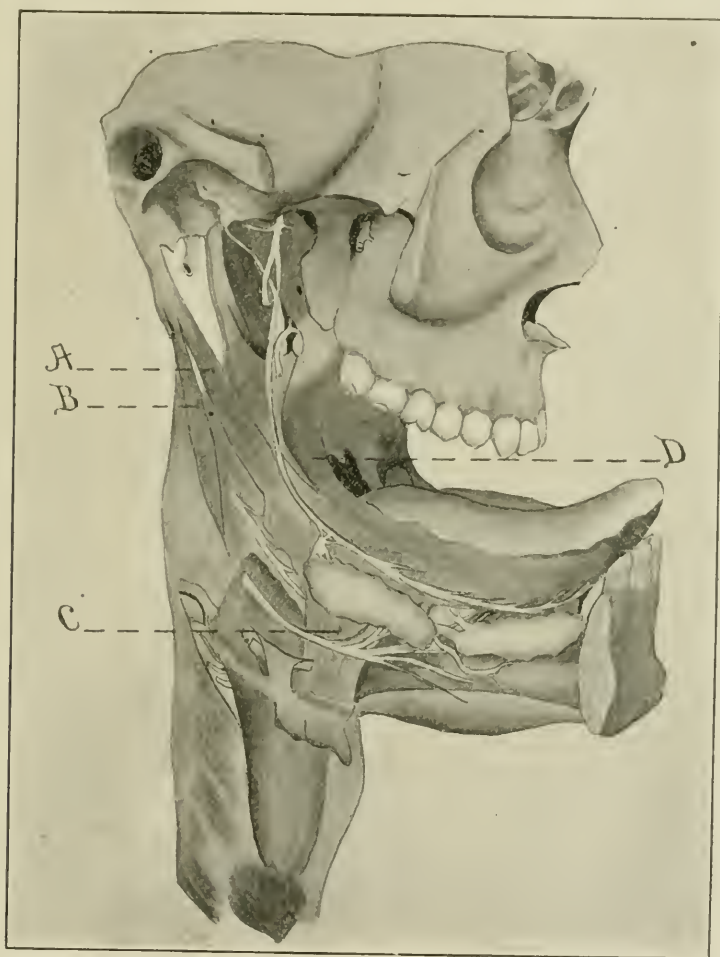
I find in the cases to be presented for your inspection, that any variation of action of certain extrinsic muscles of the larynx, disarranging this fixation and cord-stretching, is alone responsible for these growths. In the two cases I have shown you we find all the



layers of chin to hyoid bone muscles over-exerted, thus drawing the hyoid bone forward and forcing the larynx from its normal position at the fifth cervical vertebra of the spine. In one of these cases the hyoid bone is pulled from the thyroid cartilage, while, in the other, the jaw is pushed forward from its place in the socket, forcing the whole vocal instrument forward.

The tongue becoming hard, and either raised too high or lowered at the back, stops the possibility of proper cord-stretching by interfering with the action of the palato-pharyngei muscles. Tones thus produced are held to a certain point in the scale by these interferences, when a change of action takes place. At this point of

change we find the break in the voice and node formation. Faulty action of this kind is so apparent, that one accustomed to note normal conditions is immediately struck by the swelling and hardness of the muscles of the chin, also the throaty tone produced, both in speech and song. A remedy for these conditions in the



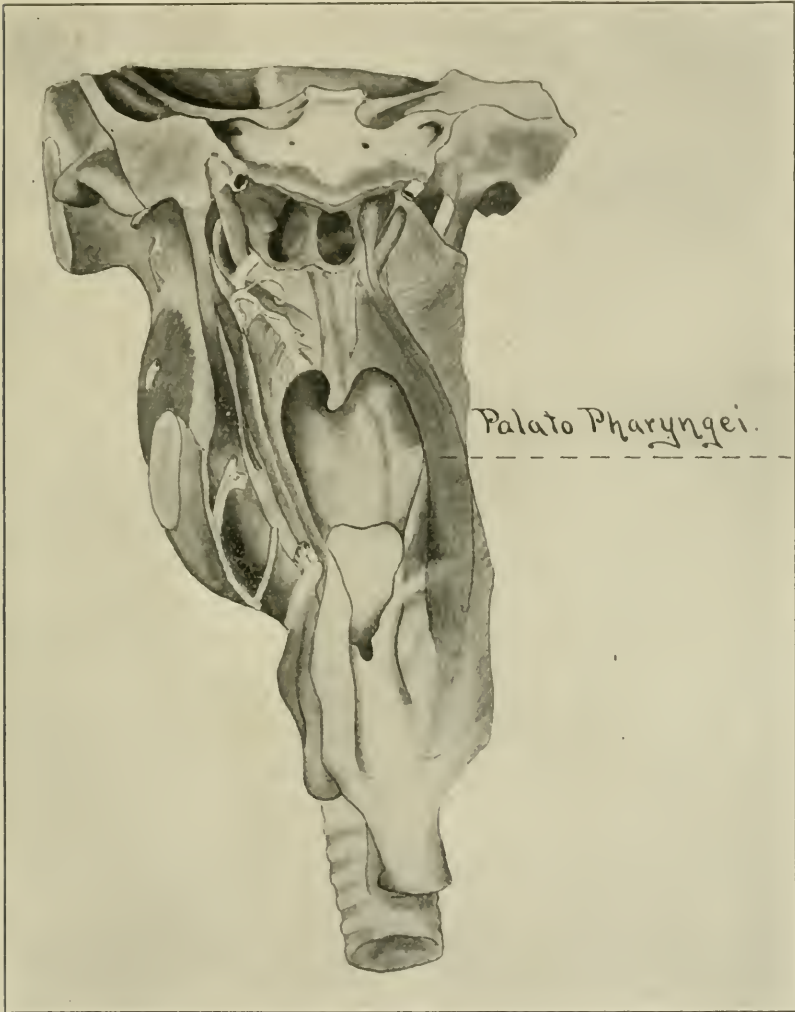
A. Stylo-Glossus,—tongue to ear. C. Hyo-Glossus,—tongue to hyoid bone.
 B. Stylo-Pharyngeus,—tongue to hyoid bone. D. Palato-Glossus,—tongue to palate.

singing voice has been suggested by Dr. Holbrook Curtis, consisting in depressing the chin upon the sternum using supra costal respiration, focusing the tone in the masque while with poose lips the syllable me, (pronounced maw), is lightly sung on various

pitches of the scale, empirically this exercise has many times given relief. To my mind and experience, I find prompt relief and rapid restoration in proper and vigorous massage of the strained parts. The massage is given thus: The fingers are oiled to prevent hurting the skin and drawn rapidly from the center of the lower jaw-bone backward across the chin muscles to the hyoid bone, keeping as well as possible the line of muscular fibre. The usual efforts given in Swedish massage, boring, straight rubbing and shaking are employed for the purpose of stretching, relaxing and restoring circulation to the over-contracted parts. The same method is used on the muscles from the larynx to the sternum and clavicle, also from larynx to the ear. This treatment should be given daily and the duration of each sitting should be long enough to produce renewed circulation in the parts. Relaxation of the chin muscles is not alone sufficient to allow the larynx to drop to its normal position. Cord-stretching efforts which have been weakened by this faulty action must be re-established and strengthened, to take the place of what has been abnormal.

In all these cases we find the palato-pharyngei line of cord-stretching muscles much relaxed and almost in disuse. To restore these we give such an exercise as the following: Let the patient open the mouth, and watch the palate muscles behind the tongue as he makes a sound as if to expel mucus from the upper pharynx. Note, at the moment of the sound, that the palate muscles contract, drawing towards each other from the sides of the throat. Repeat this many times. Voluntary control is soon acquired by the power of dropping all breathy noise in producing the effort, the patient being able to draw the muscles back and forth at will. Then hold them in this position while singing the tones of the E scale. The patient soon notes vibration during tone production, all along this line of effort. While doing this the jaw and chin muscles should be left absolutely relaxed. The patient soon feels a sense of security and holding of the voice from the larynx to the soft palate, while the strain on the chin and movement of the larynx is gradually reduced. If deemed more practicable, these simple exercises, equivalent to throat gymnastics, may be given with no tone production whatever, and most desirable results obtained in an incredibly short space of time. Of course, where one is studying for the singing voice the new sense of tone effort which arises from the change of action is most desirable, and it is probably best to sing

the new effort into action as soon as possible. You readily see that the strong use of the palato-pharyngei muscles puts the effort of tone on a legitimate line of action, thus freeing the over-strained



chin and larynx muscles. This also allows the larynx to fall back and to be gradually restored to its normal condition, the jaw and chin muscles becoming relaxed and resuming their proper functions. The jaw and chin muscles are aids in voice support, and take up and carry on a certain amount of vibration, but they are not direct voice functions. Since they are not, they should not be

used as producers of tone. With the relaxation of the chin muscles the tongue is gradually relieved of strain, and proper exercises should be given for restoring it to its normal place in the mouth, high over the teeth and loose. If we find the tongue too low (as in one of the cases before you), simple exercises are given, as the following for restoring it to its balance between its four points of attachment, palate, ear, chin and hyoid bone.

When the tongue is too low (see cut 24), as in the case spoken of, it forces down the back of the hyoid bone, thus destroying any tendency of the upward pulling of the palato-pharyngei muscles to proper cord-stretching. Therefore, we must keep the tongue high in the mouth. For lowered tongue place the finger lightly upon the middle of the tongue far back, whisper the sound of "A," learn the feeling of the high tongue and gradually make this a voluntary control, singing light tones through the middle part of the voice. Lurch the tongue upward and forward so that it lightly touches the finger. Place the finger at either side of the tongue, produce the same effort; note that the sides of the tongue move forward, as well as the middle. If the side tongue muscles are shortened in drawing backward with the lowered tongue, take the tip of the tongue between the thumb and finger, draw gently from the mouth with each tone produced, until these muscles become stretched to their normal position with the production of every tone. Note whether the lower fibres of the tongue forming the floor of the mouth be lowered below normal position. If so, raise the tongue in front, place the finger just inside the lower teeth against the lower tongue muscles and lurch them gently up against the finger. Train them so, until they keep their normal place, high in the front part of the mouth. Where the tongue has become high and hardened, as in the other case I show you, exercises for the relaxation of the tongue should be given, spreading it over the back teeth, and thrusting it loosely forward its whole length during the tone production. Then draw it gradually and loosely back and forth in the mouth, lowering it slowly until it will resume a normal position just above the lower teeth.

When the tongue is too high and too far back, with hardened fibres, it cuts off the length of the palato-pharyngei muscles, stopping cord-stretching. Faulty enunciation arises from these forced positions of the tongue. By simple means it is rapidly restored and the whole vocal mechanism relieved of strain.

Many voices used in these improper ways will withstand hard strain for some years, and suddenly, at some unwonted or prolonged effort, break and form the nodes.

I find quick and rapid restoration in every case where the proper mental picture of the vocal effort is given to the patient, with a consequent relaxation of the over-exerted parts and strengthening of the normal voice supports.

Between January and June of the present year fifty-two cases of cordal disorder were treated successfully according to the ideas herein suggested. The majority of the cases showed node formation, one patient having a recurrence of double nodes three times in six months previous to beginning this course of treatment. The case referred to was that of a singer. Two weeks before her debut concert, having prepared a very heavy program, her voice failed her. After eleven treatments she went through the concert with no noticeable trouble.

Another singer was carried successfully through an evening, having a case of paralysis, the number of treatments previous to singing being ten. One case showed loss of voice of five years' standing, and another of twenty years. Both proved most interesting. The first named found tone restored at the end of six treatments, while the other could carry on an easy conversational tone, and read aloud at the end of fifteen treatments.

In no case has there been failure to produce rapid and permanent results, and I am confident that the remedy has been reached whereby all such conditions of voice failure can be relieved.

In conclusion I take pleasure in presenting this to you for your inspection, criticism and discussion, and hope it may prove as interesting to you as it has to me. I am greatly indebted to the four patients and two able assistants who have been so kind as to accompany me here, and lend their services for our common good. Miss Emma A. Dambmann, Miss Ethel Parks, Miss Hilda C. Paulson and Mr. Emmet DeVoy are all singers of recognized reputation, who have suffered voice difficulties of the character above described. I am also very grateful to Mr. Charles A. Rice, vocal teacher, who has made the sketches for this work, and some fifty lantern slides to fully illustrate the lecture, while Miss Dora Louise Topping gave the muscular exercises and tone work for the restoration of the voices.

22 West 31st St., New York, N. Y.

BENIGN TUMORS OF THE NASO-PHARYNX.*

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Notwithstanding the great number of cases of these growths reported singly or in small groups, there is probably no subject in medicine of such importance in which there is such a dearth of collective investigation. Since the study of these tumors by Beusch, in 1878, in which this author attempted to collect and tabulate the case histories to date, it is very doubtful if there has been a single earnest endeavor in this direction. The reason is not far to seek, for the term "naso-pharyngeal growth" includes a great variety of neoplasms of every degree of clinical importance, and while these growths may agree in occupying the naso-pharyngeal space, they present such differences in point of origin, texture, vascularity, tendency to recur, frequency, etc., etc., that a joint study would produce results which would not only be devoid of any permanent scientific value, but which would give rise to extreme confusion, especially in regard to the indications for treatment.

The first step in the rational discussion of these growths is a classification, and it is the absence of this fundamental requisite which is responsible for the abortive state of our present knowledge of the subject.

It is true that most authors separate the so-called typical fibroma of the naso-pharynx from all other growths which occur in this locality, and recognize it as the most important of these neoplasms. But a corresponding effort has not been bestowed upon the numerous other varieties of tumor, and it is self-evident that the entire subject must be considered in a uniform manner.

If the arrangement of these tumors, as proposed by Gerber, of Königsberg, (Kurt Schreiber. "Über die Geschwulste des Nasenrachenraumes," Inaugural Dissertation, Königsberg, 1896), were in general use, our knowledge of this subject would doubtless be enlarged. This classification appears to have been devised after an analysis of a large number of cases of tumor of the pharyngeal

*Read by Title before Section on Laryngology and Otology, A. M. A., Saratoga, June, 1902.

vault, and is free from theoretical considerations. Some such arrangement is doubtless destined to come into general use at no distant day.

The first step is the distinction between true and false nasopharyngeal tumors. The latter, which should be considered first, comprise all neoplasms which, originating outside of the naso-pharynx, project into it secondarily. Four varieties are recognized, namely: 1. Hypertrophied posterior turbinates. 2. So-called retro-nasal mucous polypi which grow from the nasal fossae into the nasopharyngeal space. 3. Tumors (adenoma and sarcoma) which grow from the posterior surface of the soft palate. 4. Tumors (sarcoma, etc.), which originate in the cervical vertebrae. The most important member of this group is the retro-nasal polypus, which as it originates in the posterior portion of the nasal fossae—and even frequently from the choanal margin itself—is with difficulty distinguished at times from the true nasopharyngeal growth. In fact, genuine hybrids exist in which the characters of the nasal and nasopharyngeal growths occur side by side in the same tumor. When the growth originates from a choanal margin and is of a more firm consistence than the ordinary soft nasal polypus it should be ranked as of partly nasopharyngeal origin.

Coming to the genuine nasopharyngeal tumors, the most conspicuous member of this group, as already stated, is the typical nasopharyngeal polypus. This tumor is generally described as originating from the basilar process of the sphenoid, the upper cervical vertebrae or the internal plate of the pterygoid process—in other words—from some portion of the vault of the naso-pharynx. But growths in every way similar sometimes originate laterally. In Schreiber's dissection the latter are termed extrapharyngeal nasopharyngeal polypi, to distinguish them from the first type. The characters of these typical fibroids are well known. While histologically benign, they are clinically malignant from the tendency to recur. They tend to afflict youthful males. Their broad area of insertion is responsible for the numerous radical operations devised for their extirpation as well as for the many ingenious methods of attacking them through the natural passages.

There is, however, another type of nasopharyngeal fibroid which agrees with the preceding in originating from the base of the skull and affecting young males by preference, but which differs radically from it in becoming stationary after a certain size is attained. It

is also likely that the tendency to recurrence is much less marked. These growths are styled atypical, stationary or benign fibroids.

Next in order may be mentioned the fibro-mucous growths originating from the choanal margin, which we have already discussed.

The remaining varieties of true nasopharyngeal growths are all excessively rare. They comprise enchondroma, sarcoma, carcinoma, and a sort of dermoid tumor.

Let us now study the case reports and teachings of the past few years with the assistance of the preceding classification. Of the numerous clinical reports, many are not available for study because of the absence of details which would give information as to the precise character of the growth. The use of the term angioma, by a number of the reporters is to be condemned; for while differences exist in the vascularity of fibroids, a true angioma in this locality is not recognized by pathologists. The term adenoma applied to certain mucous polypi which contain glandular tissue is also confusing. The ill consequences which arise from failure to classify the tumors in this locality are apparent at every step. Writers often speak of the growths as either sessile or pedunculated, as if this matter were largely an accident or a matter of individual variation. But as the fibroid naturally possesses a broad base, while the mucous or transition form of tumor which arises within the nasal fossae, or at the choanal margin grows from a small pedicle, the difference is seen to be one of fundamental importance. If the casual operator remove a large growth of this latter type with some simple device he is very prone to rush into print. The great size of this type of growth and the attendant deformity and the ease with which the condition is remedied impress the operator with the belief that he has done something out of the common. These cases also lend themselves readily to pictorial representation, for the mass may often be seen filling the pharynx; and again, the cleanness with which the growth may be taken out by reason of its pedicle makes it an excellent pathological specimen. Not only does the general practitioner or budding specialist report cases of this type, but eminent authorities are not free from the practice, and literature abounds in such reports. It is difficult to understand how science is a gainer by reporting such material.

These cases cannot for a moment be grouped with the sessile type of true nasopharyngeal tumor where the tendency to rapid recurrence in spite of all treatment acts as a damper to publica-

tion. It is doubtful if the ultimate fact of ten per cent of such cases after operation could be determined from literature, and we know of no medical subject where such a degree of silence prevails.

The innumerable procedures for the removal of these typical growths must all be regarded as merely palliative operations until it can be shown that recurrence has not taken place over a given period.

Until the different varieties of nasopharyngeal growths are considered separately so that statistical material of each sort can accumulate, and cases be traced after operation, and consideration of this subject must necessarily be imperfect.

ETIOLOGY AND PATHOLOGY.—DERMOID POLYPI.

Under the head of etiology and pathology not much has been added to our previous knowledge during the past few years. Two studies of dermoid polypi may be cited as active contributions under these headings, and we append abstracts of them, as follows:

Texier, V. (*Presse Med.*, 1900, II, 395. *Polypes dermoïdes du Pharynx.*), concludes that these tumors are rare, 19 cases only being found in literature up to 1900. These growths arise from an anomaly of development of the pharynx, by a prolongation of the branchial arches into the pharynx. They are in the form of a polypus, which may have a long or short pedicle, gray or red in color, size of a cherry upward, ovoid, regular in shape, of firm consistence, and may contain cartilage. They are inserted on the walls of the naso-pharynx, soft palate, base of apophysis of the pterygoid. The insertion is hard to find. The symptoms caused may be cough, vomiting, suffocation when low down. The tumors grow slowly, the pedicles elongate. The only treatment is immediate extirpation.

Case. Child three months old when tumor first appeared in a fit of coughing, in the mouth. By depressing the tongue firmly the tumor could be seen when not projected, lying on the posterior wall of the pharynx, occupying the right half of the pharynx; after being thrown forward it is drawn in by swallowing motions. It passes out of the mouth 3 cm. when drawn forward, has a pedicle 4-5 cm. long, firm to the touch. The insertion cannot be seen but seems to be in the upper pharynx. Removed by snare.

Examination. Tumor is covered with epidermis containing follicles in abundance. The epidermis is of variable thickness and rests on irregular papillae arranged without order. The derma con-

sists of alveoli separated by connective tissue fibres, and containing large cells. The hair follicles are numerous, and the sebaceous glands connected with them are very small; and more or less altered. Erectile fibres are numerous, and very large. Sweat glands are much developed, form large and irregular masses, with epithelium much proliferated. Numerous blood vessels. Pedicle consists of a large artery and vein, surrounded by bundles of striped muscle fibres and with nerve elements without myeline.

A further account of these growths is given by Lecloux. (Bull. Lar., Otol., Rhinol., Mch 30, 1901. Dermoid Polypi of Pharynx.) According to this author, these are structures of special development and particular form. They are pedunculated, solitary and never exceed the size of the thumb; they are covered with a cutaneous envelope of epidermis. The center is of cellular tissue enclosing vessels, and is developed from the branchial arches. We may suppose the development is in this way: a large part of the branchial pocket is covered by ectodermic membrane; at the niveau of one of the clefts a portion of mesoderm develops in an abnormal way and grows, surrounded by a cutaneous envelope, toward the interior of the throat. The point of insertion is in the niveau of the Eustachian tube, or the posterior aspect of the velum. They are gray white to red, firm, with harder spots for the cartilage.

CASE REPORTS, CLINICAL FEATURES, ETC.

In a paper of Halasz (Wien. Med. Woch., 1902, No. 42), Beusch's old division of cases into true and false polypi is maintained without any further subdivision. In Beusch's original tabulation (188) there were 69 true and 25 pseudo-polypi. Until some such scientific arrangement as Schreiber's is adopted this crude division must be relied upon to some extent in analyzing material.

The cases reported recently appear to incline decidedly to the pseudo-polypus in type. Thus Lichwicz (Arch. Intern. de Laryngol., Vol. XI., reports a series of 7 growths with their pedicles arising from the neighborhood of the choanal margins and Downie (Glasgow Med. Journ., 1901, LV. 365), enumerates 16 simple mucous polypi, growing into the naso-pharynx; 4 fibroid-mucous growths originating in the vicinity of the choanal margin, and but one typical fibroma of the pharyngeal vault.

It would be a simple matter to reckon up from the case reports of the past three years as many as 50 examples of pseudo-polypi growing from within the nasal fossae or at the choanal margins.

Such growths are readily recognized even from imperfect descriptions. Much more trouble is encountered in fixing the status of the true polypi both as to exact seat and composition, and much of the material published is unsuited for analysis. Powell (*Journ. Laryngol.*, 1900, XV), mentions a growth which originated from the body of the sphenoid, but as he describes it as a myxofibroma it was doubtless of transitional origin. Shafer reports a series of five cases of naso-pharyngeal growths operated upon by himself (*Monat. f. Ohrenheilk.* XXXV, p. 507), but details are not furnished. Downie, as already mentioned, cites one case of a tumor growing from the pharyngeal vault, and Rice, after mention of a similar case, states that he has seen but three such growths. Delie (*Ann. de Mal. de l'oreille, etc.*, 1899, XXV), describes a growth of the right side of the pharyngeal vault which from description was doubtless of transitional origin. He was able to extract it through the nose. Michalkin (*Mediciniskje Obosrenje*, 1899, No. 5), describes a vascular fibroma which grew from the base of the sphenoid. There is no mention of rapid growth, hence the tumor may have been stationary, a typical fibroid as described by Schreiber. Richter (*Monat. f. Ohrenheilk.*, 1901, XXXV, p. 64), reports two examples of typical retromaxillary fibroids, which, in Schreiber's classification, would be classed as typical extrapharyngeal polypi. Halasz (*loc. cit.*), describes a typical fibroad of the pharyngeal vault which has caused secondary polypi in the nasal fossae. Coolidge (*Boston Med. and Surg. Jour.*, 1898, CXXXIX, 491), reports an undoubted case of typical polypus with basilar attachment, as do Lanise (*Ann. de mal. de l'oreille, etc.*, 1899, XXV), Jacques (*Rev. med. de l'Est.* 1900, XXXII, 182), Schmidshusen (*Wein. med. Woch.* XLIX, 1153), and several others. Arslan enumerates various cases treated in his clinic in Padua (*Arch. ital. di otol.*, 1898, VII), but details are often wanting. This somewhat scanty material shows the infrequency of the typical nasopharyngeal fibroid, which, indeed, is well enough known, but it also reveals the fact that such rare and interesting conditions are half the time described in a most imperfect and reprehensible fashion. It is a common rule in medical literature to describe conditions which are both unusual and of great interest with unusual care; but there is a notable exception made in the case of these growths. When we add that the ultimate termination of these cases with or without treatment, is seldom described, the necessity of creating a new

literature for this subject becomes readily apparent. Notes should be taken according to a blank form. The point of origin of the tumor and the principal tissue of which it is composed are matters of fundamental importance, and hardly less important is the rate of growth. On the other hand, the location of the mass, its prolongations and secondary adhesions, while they determine indications for treatment, must be regarded as strictly secondary and non-essential characters. The same is true of certain admixtures of tissue elements, such as unusual vascularity, etc. The growth should, of course, be classified according to their essential features. Thus, those which originate from any portion of the nasal mucosa by a thin pedicle and which have the consistency of simple intranasal polypi form such a sharply marked class of growths that there is no excuse for confounding them with any other. Zarniko, Moldenhauer and others have fixed their essential pathological characters as follows:

They are ordinary, soft polypi which originate in the back portion of the nasal fossae; they tend to attain a considerable size and eventually it may become difficult to discover the exact point of origin; they tend to an ovoid shape and as a rule are of solitary occurrence; they are not myxomata, but consist largely of fibroid tissue which gives them some degree of firmness, although the tissue is in an aedematous condition and may at times be cystic. These growths, while they may cause much discomfort, and deformity, and may give rise to operative dangers and difficulties, have none of the semi-malignant tendency of the typical nasopharyngeal polypi. They occur with tolerable frequency and some of their characters are well known, and they are amenable to many different resources of therapeutics. There appears to be little gained in reporting observations in detail.

Tumors which grow from the region of the transition between the nasal fossae and the nasopharynx are not as well defined as the preceding. Their characters vary with the precise site of origin. But while firmer in texture than the soft tumors of intranasal origin, and generally held to represent a true hybrid between the latter and the hard fibroid of the nasopharynx, they appear to partake largely of the characters of the more benign growths in that they grow from a slender pedicle and often attain an extreme length reaching even to the larynx. In reading descriptions of miscellaneous cases it is not difficult to recognize under the

description of true polypi of the nasopharynx, tumors which belong with greater probability to the class under consideration, and generally speaking, the presence of a thin pedicle and a certain softness of texture should place any tumor growing from the base of the skull in this class.

Before isolating the typical fibroid, we must allude to the atypical, stationary tumor which agrees with the preceding in texture and origin, but which after attaining a moderate development remains stationary. Such tumors may often be recognized in literature and the failure to recur, after operation, especially after electrolysis, is doubtless attributable to the tendency toward limitation of growth.

Sarcoma of the nasopharynx bears not the slightest similarity to true fibroid polypus, although the latter, because of its tendency to recurrence has been sometimes erroneously regarded as a fibrosarcoma. Actual sarcoma in this locality is soft and tends to early disintegration. It is known, however, that typical fibroids can undergo sarcomatous degeneration.

Growths in the nasopharynx, otherwise than the forms of polypi just enumerated, should be omitted in this connection. All such tumefactions as hypertrophied turbinates, adenoids and the various rare tumor formations already mentioned (chondroma, sarcoma, etc.), should never be confounded with any of the fibrous structures just described. All the polypi are essentially fibrous growths of varying density.

As already stated, the teaching that the typical fibroid originates from the base of the skull, appears to be erroneous. Growths offering all the characteristics of typical fibroids originate from a variety of bony localities and any radical separation of these varieties according to locality is doubtless unwise.

Diagnosis.—Retro-nasal polypi which simply grow from the nasal fossae into the nasopharynx are readily distinguished by their considerable volume, oval shape and slender pedicle, although when the mass has filled the pharyngeal vault its origin is not always recognizable. Transitional polypi present the same characters in the main, but are of somewhat firmer consistency, while the origin from the choamel margin can usually be made out. Typical nasopharyngeal polypi are distinguished by unusual firmness of texture and breadth of attachment, and from the fact that they stand in no definite relationship with the nasal fossae. They need not originate from the base of the skull, for they have been observed to

grow from the vertebral column, pterygoid fossa and in fact all of the osseous structures which are in proximity to the nasopharynx save those which make up the nasal fossae themselves. Angiomata are simply highly vascularized fibromata. We must not forget the important distinction between rapidly-growing and stationary fibromata, from the standpoint of prognosis and treatment.

Fibromata need not be confounded with true sarcomata which in this locality are soft and quickly break down, with the production of a fetid discharge. They do not attain large dimensions. It is possible, however, for true polypi to undergo sarcomatous degeneration; and under these circumstances we find a softening of the dense fibrous tissue but little else which would serve for diagnosis. Doubtless such a condition would scarcely be recognized until the tumor was removed or examined microscopically.

Enchondromata are extremely rare. They have been known to grow from the basilar cartilage, and appear to represent a transformation of ordinary fibroids, from which it would be difficult to distinguish them clinically.

TREATMENT.

Under this head we may consider both the actual practice of reporters as shown in their cases, as well as the principles laid down by systematic writers.

Taking the actual case reports of the past few years, we may divide the material into tumors of intranasal origin; transitional forms and typical fibroids.

I. POLYPI OF INTRA-NASAL ORIGIN.

Here there appears to be almost absolute unanimity, the great majority of reporters using the simple cold snare.

II. POLYPI OF TRANSITIONAL ORIGIN.

The treatment pursued for these growths varies somewhat as will be seen by a survey of a certain number of cases.

Loeb (*Annals of Otol. and Rhinol.*, May, 1898), used the galvano-caustic snare upon a tumor of probably transitional origin. Polyax employed the cold snare successfully in a similar case.

Thorner (*Med. News*, 1899, LXXIV), removed with the cold snare a large mass, evidently of transitional origin.

Weil removed a transitional tumor by the galvano-caustic snare and Texier, after failure with the latter, removed a similar growth

with forceps. Chiari also used the galvano-caustic snare on a growth from the choanal margin.

A large tumor removed with the galvano-caustic snare by Halasz appears to have been of transitional origin, but may have been a typical fibroid.

In a tumor of probable transitional origin (myxofibroma), Powell (loc. cit.), did a laryngotomy, then split the soft palate and removed the mass with cold snare and scissors.

Delie (loc. cit.), removed what seems to have been a tumor of transitional origin through the nose after first performing turbinectomy. The pedicle was then cut through with a bistoury.

It appears from these reports that while most operators succeed with some form of snare in removing these transitional growths, others for some reason or other, feel obliged to employ mutilating operations.

III. TYPICAL OR ANTI-TYPICAL FIBROIDS OF THE NASO-PHARYNX.

Richter (l. c.), recommends the galvano-caustic snare. If the insertion is broad multiple galvano-caustic puncture may be necessary to contract it.

Rice (l. c.), employed precisely the same treatment in the case cited by him.

Coolidge (Boston Med. and Surg. Jour., 1898, CXXXIX), removed a typical fibroid with the simple cold snare.

Michalkin (l. c.), appears to have effected a permanent cure of a typical fibroid by electrolysis.

Jacques (Rev. med. de l'est, 1900, XXXII), first reduced in size a large typical fibroid with electrolysis and finished the removal by Moure's method of morcellation. The latter recommends a special locking forceps, the blades of which are introduced singly.

Schmidshusen (Wien. med. Woch., XLIX, 1153), also uses electrolysis to reduce size then uses the galvano-caustic snare and cautery for residues.

Schafer recommends the Partsch operation for all large tumors which extend from the nasopharynx to other localities and cause pressure lesions. In this operation the roof of the mouth is cut through to expose the base of the tumor which is then removed by a chisel, cautery snare, etc. Bony and soft parts are then sutured.

Lanise (Ann. de mal. de l'oreille, 1899, XXV), removed a typical, large, rapidly-growing fibroid by resection of the two upper maxillae and palate after preliminary tracheotomy.

It is therefore, apparent that the milder measures are often of service in these cases, especially when they are combined and used for long periods of time. On the other hand, when the tumor possesses all the characteristics of the typical fibroid, such as rapid growth and invasion of surrounding cavities the most radical intervention appeals to a certain proportion of operators as strictly indicated. There can be little doubt that many recoveries after mild intervention had to do with the atypical or stationary fibroid as described by Schreiber.

Turning to systematic writers on indications and methods, we find that Escat (*Arch. de Laryngol.*, 1900, XIII, 89), like most special practitioners, is entirely averse to all mutilating operations upon sound tissues. When a growth is pedunculated a galvanocaustic snare is passed through the nose. If the growth has no pedicle or, as with typical fibroids, it must be attacked with special locking forceps as used by the author, Doyen, Mome, etc., and by curettes having bilateral and side-to-side motions. Prolongations are extirpated by cautery snares or special rectilinear forceps.

Ricanatesi (*Arch. ital. di otol.*, 1900, IX, 321), after enumerating all the various devices for operation through the natural passages, such as the cold and hot snares, fingers, curette, blunt hook, forceps, etc., states that the best method in a given case is that which can be used most rapidly.

Arslan (*Arch. ital. d. otol.*, 1898, VII), recommends the snare, hot or cold, for all tumors of limited insertion. In half a score of cases he appears to have employed no other treatment. Once he used the sharp curette of Moritz Schmidt.

Richter (l. c.), believes that the galvanocaustic snare with or without puncture to reduce size should be sufficient in all cases. Schafer, as already mentioned, advocates Partsch's operation of going through the upper maxillae in extreme cases. Delie (l. c.), speaks of Doyen's rasp and his own sharp curette for cases beyond snaring. The palate must be held aside by a thread

SUMMARY.

To summarize the contents of the preceding pages in the brief period allowed it appears that there is no approach to any fixed and inevitable plan in filling the various indications for the management of these growth and that each individual proceeds along the lines suggested by his own experience and caprice. The forceps which has enjoyed wide general vogue in the past is now somewhat distrusted by reason of the

frequency with which accidents follow its use. Somewhat similar has been the experience of the profession with the hot snare, for the advocates of this method have become less enthusiastic than of yore because the results attained are so often unsatisfactory; so that to-day, we do not read of so many cures by the galvano-caustic loop as in former years.

Conservative practitioners are inclined to look with favor upon the cold snare as having stood the test of time better than any other resource. I am inclined to regard it as the best procedure in the vast majority of selected cases. Certain growths are, of course, beyond the reach of such simple devices, although no rules can be laid down in this respect. Typical fibromata may often be removed by simple snaring, while growths which are intrinsically much less formidable are sometimes unapproachable by this means. A certain minority of nasopharyngeal growths can only be removed by the most radical procedures, such as splitting the intervening hard and soft parts and suturing the flaps after the extirpation of the tumors.

THROMBOSIS OF THE LATERAL SINUS AND INTERNAL JUGULAR VEIN, WITH RE-INFECTION OF THE SINUS AFTER LIGATION OF THE VEIN.*

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The existence of an aural discharge exposes the possessor to serious lesions, and its chronicity only aguments the dangers which may arise at the slightest provocation. Absence of subjective symptoms offers no immunity to the insidious advance of a septic process, especially in this region, as we frequently find extensive necrotic destruction without much local information.

Though acute purulent otitis of a septic character, such as seen in cases following or accompanying an attack of influenza, may rapidly extend to the mastoid and sinus, clinical data shows that chronic disease is the usual fore-runner of thrombosis in the sinus and jugular vein.

Catarrhal exacerbations often revive to virulent activity what seemed to be a smouldering ember. Traumatism will also re-awaken the dormant energy of a septic process, and cause its deleterious influence to spread with astounding rapidity. In the case which is detailed later on, a blow on the side of the head proved to be the exciting factor, though the purulent disease had existed for ten years without causing the patient much annoyance. Occasionally, local traumatism will stimulate the latent process, and thus cause a renewed activity of an old infection, as seen in those cases of mastoid involvement following the removal of excessive granulation tissue, or large aural polypi. Here we disturb nature's protecting zone, and expose a wounded area to the invasion of pyogenic organisms.

Bacteriological examinations of the aural secretion aids us in determining whether or not surgical measures are indicated, for the presence of streptococci or pneumococci certainly augments the probable invasion of the mastoid and neighboring tissues.

Chronic suppurative otitis does not heal spontaneously, and if a

*Patient presented before Otological Section, N. Y. Academy of Medicine, Oct. 9, 1901.

sudden cessation of the purulent secretion occurs, we must anticipate the possibility of an impending complication.

Thrombosis of the lateral sinus may arise from direct extension of the mastoid disease to the vessel walls by a perisinous abscess. Obstruction in the tributary veins may act as a direct cause of the sinus involvement. Macewen has called our attention to the anatomical difference between the right and left temporal bone. His investigations show that the right bone is much thinner at the site of the lateral sinus. This is due to the large size of the vessel on that side, and probably accounts for the greater number of cases of thrombosis affecting this side.

In an acute virulent otitis with retarded rupture of the drum head where the jugular fossa protrudes into the tympanic cavity, the bulb is likely to become affected early in the disease. Jansen has seen such a case and found that the upper part of the jugular vein was necrosed as early as the seventh day, though the sinus itself was not involved. He calls our attention to the possibility of a phlebitis of the bulb in cases of pyemia, particularly in acute cases, where the sinus itself may appear healthy.

Herewith give a brief history of my patient:

F. R., seventeen years of age, was admitted to my service at the Manhattan Eye and Ear Hospital on August 9, 1901, complaining of pain in the right ear and over the mastoid. He gave a history of having had suppuration in this ear off and on for ten years. Of late, the disease seemed to be quiescent, until a week before his admission to the hospital, when he received a blow over the right ear, which caused a bloody discharge for two days, with severe pain.

The examination revealed an old suppurative process, with the membrana almost entirely absorbed, and some foul-smelling pus in the middle ear, together with an area of diseased bone situated postero-superiorly. There was slight tenderness on pressure over the mastoid antrum, with the temperature at 100.8° F. and pulse 84.

Leiter's coil, with the usual hot bichloride douches every two hours, with rest in bed, was the treatment applied for twenty-four hours.

On the following day there was pain over the right side of the head, so the ice-coil was discontinued to avoid masking of symptoms. Twenty-four hours later the patient experienced a distinct chill of severe character, followed by the characteristic rise of a

septic temperature. The skin was moist, of a peculiar sallow appearance, and the tongue was heavily furred.

On opening the mastoid, August 12, not much pus was found in the antrum, but considerable granulation tissue was removed. Diseased bone was curetted from around the sinus, and as the walls of the vessel were discolored, same was incised from the knee to the bulb. A septic thrombus filling the lumen of the sinus was removed, and a free bleeding showed that the upper portion of the vessel was thoroughly patulous. The upper sinus wound was then plugged. No return flow followed the use of the curette from the inferior portion (the bulb) of the sinus, so the jugular vein was ligated about two inches about the clavicle. As no macroscopical evidence of disease of the vein was observed, no attempt at its resection was made. As soon as the ligature was applied, the vein immediately filled with blood, showing that a free circulation was being carried on through the tributaries. The antrum wound was dressed separately from that of the sinus.

For two days the patient felt quite comfortable, when a slight rise of temperature was recorded. The dressings were removed, and the neck wound was found clean and satisfactory. The antrum opening showed some pus, but the sinus wound was doing nicely. Thought it advisable to thoroughly curette the antrum at this time, until a clean return of fluid through the external canal, after syringing, showed that drainage was unobstructed. The temperature remained around 99° F. for five days, then suddenly arose to 105° F. with the appearance of chilly sensations.

On August 17th some pus was found in the region of the jugular bulb, so I removed all the bone external to the bulb, but could not find any pocket or diseased tissue. The wound was then dressed daily, but the temperature still fluctuated, and an occasional chill showed that sepsis was quite active.

On August 27th a purulent secretion was observed coming from the upper opening of the sinus. The patient was narcotized for the third time, and the external bony wall of the sinus was removed to within an inch of the torcular. An incision was made through the sinus up to the end of the bone opening, and an infected thrombus was curetted away. Free bleeding again followed this procedure, and was allowed to continue for a few seconds. A plug was then introduced into the posterior opening of the sinus, and the whole wound was thoroughly cleansed. The sinus opening was packed separately from that of the antrum.

From this operation the temperature gradually subsided to 99° F., all symptoms improved, and the patient made a good recovery.

Though the openings in the antrum and sinus were treated separately, the secondary infection of the upper and posterior sinus wound came from the antrum, as the gauze dressings were soiled at this site, and consequently accounted for the disease found at the third operation. The upper portion of the sinus was thoroughly cleansed at the first intervention, and the free flow of blood after the removal of the thrombus at that time showed that the channel was unobstructed. There can be no doubt that the continuance of septic symptoms arose from the re-infected sinus wound, for as soon as this region was cleansed these symptoms disappeared and recovery followed.

The diagnosis of sinus thrombosis is practically based upon the appearance of pyaemic symptoms accompanying an acute or chronic purulent disease of the middle ear. High temperature alone may be seen in uncomplicated otitis, but when we observe the characteristic septic temperature wave, associated with chills or chilly sensations, we can feel almost certain that the sinus is affected. Periphlebitis may cause pyemic symptoms, but Jansen remarks that the ordinary extradural collection of pus is not attended with decided fluctuating temperature. The mastoid process and dura mater are unfavorable to resorption and consequently abscesses in this process in the adult may exist for a considerable period, without causing a pronounced rise of temperature.

Probably the most prominent symptom during the course of a sinus infection, is the rigor accompanied by profuse perspiration. The patient may have chilly sensations without having a distinct chill. Furthermore, the chill may be of short duration, and be missed in the record of the case. In a patient upon whom I operated for extensive disease of the sinus and jugular vein¹ only one chill was observed during the time the case was under our observation, and yet the disease had extended to within an inch of the clavicle.

In my experience, the "cord-like" sensation of the vein could not be detected, and, consequently, I do not consider this symptom a reliable one. There is at times an enlargement of the lymphatic glands along the course of the vein, and this condition may be mistaken for the thrombosed vessel. A more constant symptom is tenderness on pressure along the anterior border of the sterno-

mastoid muscle, with rigidity of the neck muscles. Edema over and posterior to the mastoid process is often present, and when the deeper venous circulation is obstructed, the swelling is seen in the posterior cervical triangle. Headache is seldom absent, and extends over the entire side of the head, though it is more intense over the frontal region. Pain on pressure over the mastoid, along the course of the sinus, usually exists.

The symptom of stupor did not appear in any of the cases under my observation, nor was there any vomiting. Digestion was much disturbed and the tongue was heavily coated.

If the clinical picture warrants the diagnosis of jugular thrombosis, we should limit our palpation over this area, to avoid the possible dislodgment of septic material. Numerous cases have been reported, in which recovery followed the usual mastoid operation and evacuation of the perisinous abscess, though the sinus itself was thrombosed. In these instances the obstructing clot had not broken down or the thrombus was a parietal one and did not interfere with the circulation.

We are not justified in opening the sinus, surrounded as it is in many instances by septic secretion, unless systemic symptoms exist. Von Bergmann and Jansen² reject the incision of the sinus for therapeutic reasons, and particularly for diagnostic purposes, as long as a good current of blood is circulating through the vessel. Nature frequently guards important structures by providing a barrier of granulation tissue, and we must be cautious in our local manipulation, that the sinus wall is not damaged in the attempt to remove the surrounding disease. A healthy sinus becomes speedily infected if such violation occurs, be it accidental or exploratory. In a case recently reported by Dr. C. Kipp³ of thrombosis of the sinus, following an acute purulent otitis, of five weeks' duration, considerable septic secretion was removed from the sinus, but all efforts to establish communication through the bulb failed, and the operation had to be discontinued, as the patient showed signs of shock.

In this instance, the jugular vein was not tied, nor was the discolored wall of the vein removed, and though a large gluteal abscess developed in a week's time, and was opened, the patient made a good recovery. The author points to this case as one showing the possibility of a cure, with a sinus containing fluid pus, and a thrombus at the bulb presumably infected by contact with the purulent fluid, without ligation of the vein.

It is quite probable that the drainage established by the free opening in the sinus and the subsequent cleansing, removed the exciting factor, though some of the septic material reached the general circulation, as shown by the development of the gluteal abscess. The pleasant results in this case permits the belief that the thrombus in the bulb certainly resisted further septic invasion, otherwise pyemic symptoms would have continued.

We must not overlook the experience, that interference with the venous circulation of the cerebral cavity, may cause serious if not fatal results. Such instances are reported by Linser,⁴ Rohrbach and Kummer.

In the case mentioned by Linser, the internal jugular vein was tied on account of adhesions due to a former inflammatory process, during an operation for goitre. Death resulted on the following day from symptoms of accelerated pulse and respiration with great cyanosis. The autopsy showed the cause of death to be edema of the brain, which was said to be due to the diminished size of the left jugular fossae, and when the large vein (right) was ligated, the retarded circulation caused the above condition.

In cases of sinus thrombosis with septic symptoms, where no communication can be established through the bulb, we should always protect the general circulation by ligating the jugular vein and even re-secting same, and its tributaries, if they appear involved.

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38 East Sixtieth Street.

RAPID DILATATION AND THE PROLONGED USE OF INTUBATION TUBES IN STENOSIS AND IN CICATRICAL OCCLUSION OF THE LARYNX. REPORT OF TWO CASES.*

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One of my chief reasons for reporting the first case is to call attention to the means which I employed to stretch the stenosed larynx.

Case 1.—Ernest L., Italian, aged 17 years, dealer in flowers, was admitted to the Massachusetts General Hospital on January 8, 1900. His family history was negative. He had had gonorrhea one month before entrance but no specific history could be obtained. He said he was well until June, 1899, when a lump appeared on the left side of his neck, which grew larger and was opened by an Italian doctor. During the latter part of July the patient noticed a spot over the thyroid cartilage which was soft and which on straining increased to the size of a marble. This was opened by the same doctor and air escaped and the patient breathed partially through this opening. Up to this time there was no change in the voice and no difficulty in breathing. The opening in the neck healed and the same expansile tumor appeared again. In the latter part of August this tumor was opened in the surgical out-patient department and a fistula established. This remained open until about the middle of November with hoarseness and dyspnea gradually increasing and cough at times paroxysmal. On December 9th tracheotomy was done on account of dyspnea and cyanosis. The patient was put on specific treatment at this time but nothing was done locally for the larynx. I saw him about six months later, in the summer of 1900, when he was wearing a tracheotomy tube. On closing the tube with his finger he could speak with considerable effort in a low whisper and apparently could get extremely little air through the larynx. His throat was unusually difficult to examine, but after several trials I succeeded in seeing the larynx. The chink of the glottis was extremely narrow, owing apparently to an infiltration of both sides of the larynx, the ven-

*Read before the American Laryngological Association, Boston, May 26, 1902.

tricular bands being also very much swollen. There was no evidence of ulceration or signs of there having been any, nor was there in any other part of the body any evidence of an active syphilitic process. For a time I attempted to dilate the stenosis with Schroetter's tubes without success. The infiltration was so firm and the stricture so narrow that I was unable to pass the smallest tube, using considerable force. I then determined to try the passage of intubation tubes under ether, with the intention of leaving one in, if I succeeded in passing it. There was considerable delay in obtaining the hard rubber tubes which I desired, but finally on December 26th he was readmitted to the hospital and on the following day I attempted intubation. My first difficulty was that the larynx was so far down, largely due, no doubt, to the fact that the patient had worn a tracheotomy tube so long, that I could not, try as I might, reach the arytenoids with my finger. I was thus unable to properly guide the intubation tube into the larynx and after several unsuccessful attempts was obliged to give it up. A few days later I had him etherized, then, while he was lying flat on his back with a pillow under his shoulders, I removed the tracheotomy tube. I then introduced a small female urethral sound, about No. 15, French, through the tracheal opening up into the larynx so that I could feel the end of it with my finger in the throat. I continued to pass the successive sizes in the same manner until I reached No. 37 French. The last few sizes passed with considerable resistance. The tissues seemed to stretch rather than tear and there was very little bleeding. I next tried to insert a large adult intubation tube in the ordinary manner, but without success, meeting the same difficulties as at my previous attempt to intubate. I then passed a pair of long, narrow, slightly curved forceps into the tracheal opening and up through the glottis. On this I put the intubation tube. Then pulling the forceps back through the tracheal opening and following the tube with the forefinger of my left hand, I was able to get it into place in the glottis. There was comparatively little reaction after all this manipulation of the larynx. The patient had a little difficulty in breathing and could take no food by mouth so was fed by enemata. On the next day (January 2, 1901), he took in addition milk by the mouth in small quantities. Evening temperature was 101° F. On January 4th his temperature was normal. He took milk and custard by mouth. Had no difficulty in breathing through the tube. On January 5th at 7:30 a. m. he coughed up the tube. Marked dyspnea came on at once and the

old tracheotomy wound had to be opened and a tracheotomy tube inserted. Later in the morning the intubation tube was reinserted under ether. The problem now was to devise some means to hold the tube in place so as to avoid any such accident in the future. This would have been just the case for the projecting retaining arm suggested by Rogers of New York and spoken of by Simpson in his very thorough paper on intubation in chronic stenosis of the larynx, read before this Association last year. Unfortunately I did not know of it at this time. Nor was I allowed any time to devise some means for retaining the tube, for the next morning the patient insisted, in spite of all that I could say, upon having the intubation tube removed and the tracheotomy tube replaced. He and his relatives had been so alarmed by the accidental coughing up of the tube that they became absolutely unreasonable. I was therefore obliged to give up the case and discharge the patient with the tracheotomy tube in as before. There seems good reason to believe that if I could have continued treatment I should have obtained a good result as far as the patency of the larynx was concerned. In this case the ordinary O'Dwyer extractor was not long enough to reach the tube and I was obliged to first raise it from below through the tracheotomy wound before I could remove it. I wish to call attention once more to the use of female urethral sounds in dilating this stenosis and to strongly recommend their use to anyone having a similar case. They could not have worked more satisfactorily if they had been made expressly for the purpose. It had been my intention to keep a tube in this larynx for at least six or eight weeks continuously, just as I did in the following case:

Case II.—Gertrude B., aged five years, was brought to see me at the Throat Clinic of the Massachusetts General Hospital in the latter part of April, 1900, wearing a tracheotomy tube. Her father gave the following history:

She was taken ill with diphtheria on December 25th, 1899, and was treated at a suburban hospital, where it was found necessary to do intubation. She coughed the tube out and it had to be reinserted several times. In the latter part of January the tube was removed temporarily, but when it became necessary to replace it it could not be done quickly enough. The child became cyanotic and tracheotomy was performed. Every attempt to dispense with the tracheotomy tube after this was followed by dyspnea and cyanosis. On laryngeal examination I found the vocal cords united together

for nearly their whole length by cicatricial membrane, leaving only a small open space at the posterior part of the glottis. It was found, however, on closing the tracheotomy opening temporarily with the finger that not the least breath of air entered the lungs through the glottis. It was consequently assumed, rightly as it proved, that there must be other cicatricial tissue below the cords which completely occluded the larynx. While I was endeavoring to make up my mind what was the best method of treatment to pursue in this case my attention was called to an article of Dr. John Rogers, Jr., in the *Annals of Surgery* for May, 1900, on the treatment of stenosis following diphtheria by the prolonged use of intubation tubes. I at once wrote him to obtain fuller information on some points and desire to express here my thanks for the interest which he showed in my case. There was some delay in obtaining the hard rubber intubation tubes required. But finally, on July 10th, the operation was performed. The child was etherized and placed in the Rose position. The tracheotomy tube was removed and Dr. Conant, into one of whose wards the child was admitted, made an incision upwards in the median line of the neck through the superior tracheal rings. The cicatrices in the trachea were divided as they were found. A probe was then passed up from below through the opening at the posterior portion of the larynx until I could feel it with my left forefinger passed through the mouth down to the larynx. The opening was then carefully dilated with hemostatic forceps under the guidance of my finger resting on the arytenoids. During these procedures the tracheotomy tube was reinserted to pass a 10-12 intubation tube, which proved too long to get by the angle formed by the roof of the mouth and the posterior pharyngeal wall. An 8-10 tube was inserted without using much force. The tracheotomy wound was partially closed with silk-worm gut sutures and a dry dressing applied. The child breathed with ease through the laryngeal tube. Salt solution enemata, ten ounces every six hours, were given and nutritive enemata, every six hours. Several unsuccessful attempts were made to feed by stomach tube, the child vomiting the liquid every time, some of which got into the trachea through the intubation tube. On the fourteenth day she was able to swallow soft custard without distress. The hospital record on July 31st says:

"Since last note child has been improving rapidly. Takes any kind of soft food but is unable to take liquids." August 7th—"General health excellent. Wears tube without discomfort. Is able to

take soft solids without difficulty but cannot swallow liquids except cracked ice which she allows to dissolve in mouth." August 15th—"Salt solution enemata omitted as patient can now swallow liquids without difficulty." On September 4th, the tube having been in about eight weeks, I determined to remove it. The child was etherized and placed in the dorsal position with a pillow under the shoulders. The tube was then withdrawn. It came away with some difficulty and there was some hemorrhage. The respiration became noisy and labored and finally ceased, the chest wall moving spasmodically up and down without entrance of air. Tracheotomy was at once performed through the old scar and artificial respiration soon started the breathing and the color became normal. The child was up and about the ward the next day with no symptoms. Six days later, on September 10th, I removed the tracheotomy tube and found that she breathed partly through the larynx. A small valve-like piece of granulation tissue, situated above the tracheotomy wound was removed and the wound drawn together with crepe lisle. On September 14th, when the tracheal wound was nearly closed the respiration again became labored and noisy and color poor, necessitating immediate opening and dilating of the wound and reintroduction of the tracheotomy tube, as there was no one on hand who could put in the intubation tube. On September 17th I again put in the 8-10 tube under ether. It went in with some difficulty, showing that there had been already some contraction. Thinking that a tube of larger diameter would be better I had the 10-12 tube shortened to the length of the 8-10 and introduced it on September 21st in place of the latter. The patient was now allowed to go home with the tube in. After being in a little more than a month I removed this tube. There was some bleeding but the child soon breathed easily. In six days I was obliged to replace the tube, owing to rapidly increasing dyspnea. I left it in for five weeks and then removed it. It came out with some difficulty and there was a slight amount of hemorrhage. This time it was out for nearly two weeks and then had to be reinserted. After being in for five weeks it was again removed on February 1, 1901, again with some hemorrhage. On February 11th, I passed the 8-10 and 10-12 tubes but did not leave them in. On February 25th I went through the same procedure. I began now to be somewhat encouraged and let the patient go nearly a month without treatment. On March 22d I thought I had better pass the tubes again. On attempting this under ether I found that there had been

so much contraction that I had to begin with a 4-5 tube. I stretched the strictures up to an 8-10, which went in with so much difficulty that I did not attempt the larger tube. On the next afternoon I was hastily summoned to the hospital, where I found my little patient breathing with great difficulty. She had begun to breathe badly at 6 o'clock that morning. I introduced the 8-10 tube and left it in, and a week later I substituted the 10-12 for it with ease. This was removed in a week. Breathing again appearing slightly obstructed at the end of three weeks, April 24th, I again passed the tubes, beginning with the 4-5 size and leaving the 8-10 size in. On May 3d I substituted the 10-12 size for this, leaving it in two weeks. On its removal there was almost no bleeding. A week later, finding that there had been some contraction, I left this tube in again after passing the two smaller sizes. On June 14th I removed the tube, and there was practically no bleeding. Up to the present time, over eleven months, the child has breathed naturally through the larynx. The appearance of the larynx is now as follows: The glottis is free from cicatricial membrane. The left vocal cord is held in position of extreme abduction, probably as a result of the scar formation. Below this cord the tracheal wall appears swollen and somewhat redder than normal. The right vocal cord appears to move freely, but not sufficiently so except by great effort to come in contact with the abducted left cord. The patient, consequently, speaks only in a whisper, except when by an effort she makes a low gruff tone.

I have reported this case in full in order to show more graphically than I could in any other way its obstinate character and the frequently recurring contractions of the cicatricial tissue until at times I begin to despair of ever being able to dispense with the intubation tube. The bleeding which occurred at each removal of the tube I believe came from a granulating surface, and the fact that there was no bleeding at the last removal I take to mean that this surface had healed. I think I might have curtailed the time of treatment in this case if I had put in the shortened 10-12 tube at first. I hardly think it would have been possible to have put in a tube a size larger if I had had one, as the 10-12 tube seemed to fit very snugly. The cicatricial tissue in this case was the result of ulceration due more probably to the diseases than to the frequent intubation. Northup's case reported by Rogers is similar to mine. In his case frequent auto-extubations finally necessitated a tracheotomy. Death followed in about a month from pneumonia and at

the autopsy the larynx was found completely occluded by a cicatricial diaphragm. Rogers says: "The commonest cause of post-diphtheritic stenosis necessitating long continued intubation is hypertrophy of the subglottic tissues accompanied by a chronic inflammation. Intubation is in no way the cause of this, as it occurs irrespective of the operation. Less often there is an ulceration, and subsequently the formation of a greater or less amount of cicatricial tissue and contraction. This likewise is not the result of the intubation except in rare and practically unavoidable instances." That stenosis of the larynx following diphtheria, especially the variety due to the formation of cicatrices is rare, statistics show most conclusively. Out of about 800 intubations during the last seven years at the Boston City Hospital, Dr. McCollom informs me that he has seen but one case and that recently. This case was a child four years old, in whom there was apparently a complete occlusion of the larynx, no air coming through it. The child is still wearing a tracheotomy tube, as the mother refused to have anything done. Roger's paper makes mention of only two reported cases in which the presence of cicatrices was actually proved. Summing up the experience of a number of observers whom he quotes, he concludes that "a reasonable estimate of its (chronic stenosis) average frequency would therefore be not far from one in every 100 intubations." I have been unable to find in medical literature since the publication of Roger's paper any report of a case like the one which I have just presented.

A NEW DEVICE FOR SYRINGING THE EAR.

LEWIS G. LANGSTAFF, M.D., BROOKLYN, N. Y.

This device, a cut of which is herewith shown, is regarded by the author as a decided improvement on any appliance in use for the same purpose. A simplified form, more especially for patient's own use, is shown in Fig. No. 2.

These instruments may be used attached to a fountain syringe by a glass connecting tube. The simpler one may be directly connected to a piston syringe by a section of rubber tubing; this, I have found to be very handy and efficient, giving plenty of force for wax or foreign body.

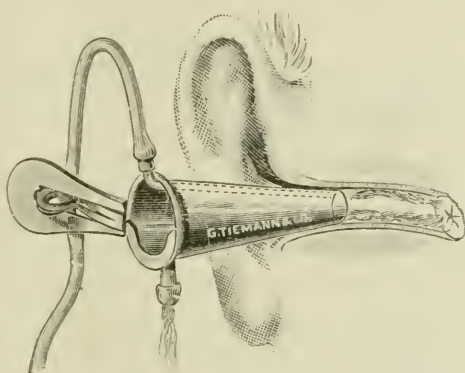


Figure 1.

The cut explains itself so clearly that I need only add that the cone portion of it, which is inserted into the external meatus, consists of a middle-sized cylindrical ear speculum; the spring cut-off acts by releasing the pressure of the thumb by which the fluid is allowed to run. As it acts automatically and instantaneously, there is no stopping or spurting of water over the patient on removing the cone from the ear. I believe that the greatest aid to the cure of suppurating middle ear inflammations is thorough cleansing, and conversely, the most frequent prevention of cure is inefficient removal of discharges. With this apparatus the patient can wash out his ear as well as a skilled nurse and with a confidence that it is thoroughly done.

For continuous irrigation, I cut off a narrow section of rubber tubing and slip it over the end of the cone. This permits the water from escaping between the meatus and the cone. In this way a patient's ear might be irrigated while he is lying down if necessity required. As the entering stream is very small, a smaller quantity of water is required. It will be observed that the stream flows along the upper wall on the drum head and returns over the floor of the meatus. A current is produced which reaches all parts. A glass douching tip is on the market slightly similar to this instrument in principle. Its in-flow tube is centrally situated, the stream tends to strike the drum direct; the out-flow is obstructed by this in-current and the result is simply a commotion of water without definite direction. In the case of wax, the simpler form with piston syringe (to get more force), should be used. The small stream constantly bearing on one point has an excavating power which is rapidly effective in breaking up and removing the wax.

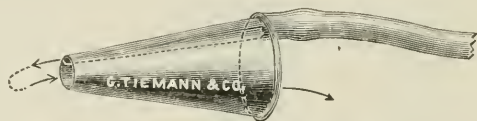


Figure 2.

The short connecting rubber tube which should be about $1\frac{1}{4}$ inches long and thick walled, (to support the cone in a horizontal position), allows the cone to be gently insinuated in the meatus, and prevents that joggling which may occur when the tip is a fixed or rigid one. As not more than a tenth part of the inner lumen of the cone is taken up by the flattened in-let tube, the speculum value of the instrument is not noticeably impaired. This feature has an obvious value. To sum up, the advantages claimed are:

1. Efficiency in skilled or unskilled hands. ·
 2. Safety—no risk in unskilled hands of forcing the drum through obstructed outlet.
 3. Requires less water and thus allows prolonged continuous irrigation. (As the meatus is narrow and will only hold about ten minims, large streams are unnecessary.)
 4. Painless and comfortable; children do not object to its use.
 5. Useful as a speculum—meatus in view while in use.
 6. No slopping over physician or patient.
- 19 Seventh Avenue.

SOCIETY PROCEEDINGS.

LARYNGOLOGICAL SOCIETY OF LONDON.

Seventy-Fifth Ordinary Meeting, June 6, 1902.

E. CRESSWELL BABER, M.B., President, in the chair.

The president called upon Mr. Charters J. Symonds to open the discussion

The Diagnosis and Treatment of Malignant Stricture of the Oesophagus.

Mr. Symonds said:

Mr. President and Gentlemen:

To put the subject of this debate briefly, it may be said that the diagnosis of malignant stricture of the oesophagus resolves itself into the passage of a bougie to ascertain the presence of an obstruction, and the treatment in deciding the best way to introduce food. One sees, however, so many cases treated for dyspepsia that it is necessary to consider a few of the early symptoms. In speaking to an audience of experts, I will limit myself to what appear to me to be essential points, and endeavor not to weary you with unnecessary details.

A gradually increasing dysphagia is the common history in most cases. In by no means a small number the onset is sudden, e. g. at a particular meal; a man choked over a mouthful of meat, and from that moment had difficulty. Another, after shouting himself hoarse in welcoming the men from the Powerful in the city, had choking the same evening, and developed cricoid obstruction. In one instance a loathing for food, so great as to require feeding by a tube, was the leading sign for some weeks. In another the man complained of pain as the food passed the center of the gullet.

I have seen one instance where there was no dysphagia; the man was anaemic and was thought to have cancer of the stomach, and when his evacuations were black this view was strengthened. At the autopsy, we found the greater portion of the oesophagus occupied by an ulcerating carcinoma, which had enlarged and not constricted the lumen at any point.

Before a bougie is passed a good many patients are treated for dyspepsia, and much valuable time may be lost. One sees such patients losing flesh, not so much on account of inability to swallow, but because the diet was gastric. It must be remembered that so-called "dyspepsia," i. e. loss of appetite, "tightness at the chest," water brash, some pain and distension, with irregular bowels, may be the result of oesophageal obstruction. The restricted diet usually prescribed tends to increase the symptoms. A diagnosis can generally be made by asking the patient to swallow liquid. This when marked is characteristic; he makes one ordinary effort, followed by one or more smaller ones; these are accompanied by certain peculiar movements of the neck. Then he brings up a little gas, often hits his chest, and says now it has gone. Kussmaal's sign, viz., listening to the back to hear the fluid arrested at the stricture and then trickling through is always interesting, and when the observer does not pass a bougie is sometimes valuable. I am sure from what I see that an unnecessary fear exists in the minds of many as to the danger attending the use of a bougie. Provided that a fair size be employed, and no force used, and especially that no pressure be made when the patient strains to extrude the instrument, there is no danger. The bougie should be advanced in a deep inspiration or on an act of deglutition, held still on any expulsive effort, and again advanced on inspiration. That there are dangers with fine bougies, and in advanced disease, one cannot deny. In passing the cricoid one must wait for the inspiration which follows the first glottic closure, or make the patient regurgitate by passing the left forefinger far back on the tongue. To press at this moment in close cricoid stricture may send the bougie into the trachea. Once more it may be added that in impermeable cricoid obstruction, where the patient is particularly tolerant, there is special risk of entering the trachea. It is remarkable to note how a patient will bear the presence of a large bougie in the windpipe for some time without coughing. In any doubt we must pass the bougie not more than twelve inches, and examine its position with a laryngoscope. These special points refer rather to treatment; it seemed but right to refer to them here.

With these general remarks, I will next ask you to consider the diagnosis of the disease as it affects the three situations, viz., the upper third and cricoid orifice, the lower end and gastric orifice, and the central region.

I. Uppe^d Third.—Stricture at the cricoid or beginning just be-

low the ring is, in my experience, always malignant. It begins at $8\frac{1}{2}$ to 9 inches from the teeth, and usually involves 2 or 3 inches. The chief peculiarity is the tendency to cicatrise and contract; so marked is this feature that a specimen may be indistinguishable to the naked eye from a chronic syphilitic or other ulcer. If the margin, however, of such a specimen be examined microscopically, squamous epithelial growth will, I believe, always be found. The contraction is irregular, so that a bougie in passing may have to turn several corners. In the diagnosis of disease at the cricoid I have found three conditions give rise to confusion:

a. The one most closely resembling organic disease is dysphagia, occurring in elderly people. In the first instance that came under my notice, the patient was a woman aet. 70; there was dysphagia for solids, and fluids caused trouble; a bulb passed with difficulty, there was a streak of blood, and altogether I thought gravely of the case, and gave a serious prognosis. The symptoms soon disappeared, and the patient, after some years, is still well. A similar instance came before me again in a woman over 70, and another in a man over 80. In the persistence, in the indefinite obstruction to a bougie, and in the age of the patient, there is sometimes a close resemblance to malignant disease. There is also an absence of the nervous symptoms seen in younger people. The condition suggests some organic change, giving rise to temporary interference with deglutition. I have thought that possibly an excessive cricoid ossification, or some bony outgrowth interfering with movement might explain these cases.

b. The nervous form, especially when occurring in men, and in medical men above all others, can only be settled by time. Suddenly such a patient has difficulty at a meal over a mouthful of food, and later cannot swallow a pill or a crust of bread. He has to be more careful in eating than before. It is well known that such is often the history of the early stages of malignant stricture. The passage of a bougie is not easy, a little blood may result to further confuse the issue, or one may fail to pass the bougie beyond the cricoid without undue force. Where such symptoms occur in a man of forty-nine or fifty, the diagnosis is not easy. In both affections the freedom of swallowing varies, in both soft solids are better dealt with. I would say, however, that in malignant disease, the patient almost always permits the passage of a bougie, and that there is found irregularity of the surface indicating disease of some standing. Practically in the majority there is no great difficulty, but in a

few cases—especially if they happen to be medical friends—it may give rise to no small anxiety. In most cases it is best, I believe, to give a positive opinion as to the simplicity of the case and wait with your own secret fear.

c. The third condition is that of a pharyngeal pouch. When well-marked, the symptoms of this complaint are so defined as to quickly clear up any difficulty. The subject has been so well dealt with before this Society that I need only refer to Mr. Butlin's communications.

d. Malignant disease of the lower end of the pharynx, involving the arytenoids, cannot be excluded from a discussion upon oesophageal stricture, and as the same treatment is required, I must refer to it here. The main distinctions are the pain accompanying dysphagia; the voice early has the peculiar sound produced by the presence of oedematous arytenoids; again, the growth can usually be seen in the early stages. It appears first as a pale cushion below the arytenoids, and gradually advances, giving rise to early oedema of one or other arytenoid. These patients often continue to swallow fairly well and can, so far as I have seen, always be relieved by a soft tube. The direct extension to the larynx is the special feature of disease in this situation. Those who have seen many of these cases will have observed the greater frequency in women, and in many at an age nearer thirty than forty. I may add that in one instance—a woman also—the early mass seen below the arytenoid disappeared under iodide of potassium. I have not myself encountered syphilitic disease lower than the pharynx. I have one patient with slight obstruction just above, or at the cricoid, who had originally—some thirty years ago—syphilitic ulceration involving the larynx.

2. In the middle third a sarcoma and a myoma may occur, and give rise to obstruction. In one of my cases a sarcoma was found as a localised tumor, but clinically it was indistinguishable from the ordinary carcinoma. With such rare exceptions as these, all obstructions of any moment in this section of the oesophagus are due to carcinoma. It is very noticeable that aneurysm and mediastinal growth rarely give rise to serious dysphagia. Once only have I passed a bougie in a case of aneurysm, and the sensation communicated to the hand was, I thought, diagnostic of the disease. The case was sent to me with a diagnosis that mediastinal pressure was absent. The bougie passed over a convexity and smoothly descended without any difficulty.

Œsophageal pouches occurring in the middle and lower sections are sometimes very difficult to detect. In one patient, æt. 72, symptoms of obstructions had existed for several years; a bougie was arrested 14 inches from the teeth; on one occasion it slipped past, and there seemed abundance of room. Under choloform, the largest bougie was several times guided past the orifice. At this time he regurgitated a good third of his food. For another two years he went on much the same, and died somewhat suddenly from another malady. There was no doubt a pouch in this case. The long duration was a strong point against malignant stricture; the second, that he could always take solids.

In another instance a man was sent to me for pyloric vomiting; without going at length in his case, I may say that the symptoms pointed to obstruction low in the gullet, and the large quantity of food retained to the existence of a pouch. He was fed by a tube, and the vomiting ceased. I thought it better that the man should learn to feed himself in this way than undergo a gastrostomy. After a year of such treatment, he is in good health and able to do his work.

3. The lower end, i. e., a point $15\frac{1}{2}$ inches to 17 inches from the teeth is, in my experience, the only locality where we find a simple obstruction. One is justified in saying that, as the obstruction is in this situation, the cause may be simple, and that the mechanical difficulty being overcome, the future carries more hope than does obstruction in any other situation. I have notes of five such cases, two with pathological evidence, while three are clinical. In the first two the symptoms were those of obstruction only, and they died unrelieved. One of the three living cases has had symptoms for some years, and is relieved from time to time by the passage of a Coude bougie; another has swallowed well since a gastrotomy was performed over a year ago, never having required to use the artificial opening; while the third has had symptoms for twenty years, and requires a bougie from time to time. I will again refer to the use of the Coude bougie in obstruction at the lower end; let me here, in referring to diagnosis, insist upon its great value. When a small, straight bougie will not pass, a large Coude may slip through easily. The two specimens referred to showed a simple fibrous thickening, allied, no doubt, to that seen in the pylorus.

Slighter degrees of obstruction occur in this situation, which may be called spasmodic. I have seen only one marked case, a lady æt. 30, who, when I saw her, had had obstruction for twenty-four hours.

A bougie encountered resistance, which yielded as would a tight sphincter. The obstruction was definite, not a purely nervous form. This brings one to the whole question of "spasmodic stricture," so called. Personally I must express a disbelief in such a complaint, apart from the hysterical cases. Of these latter, the two worst occurred, the one in a boy æt. 7, and the other in a man æt. 35, both hospital patients, and both greatly emaciated. The boy was cured by the temptation of a penny currant bun, the man took a pair of the largest bougies. All the cases brought to me for spasms, except the hysterical, have a basis of malignant growth. I have mentioned before that in a growth in any situation there may be, in the early stages, much difficulty from added spasm and varying mechanical alterations in the growth itself, permitting the taking of solids on one day, and of fluids only with difficulty on another.

When the stomach is infiltrated by malignant disease, and so reduced as to hold but a couple of ounces—the so-called leather-bottle stomach—the resemblance to obstruction at the cardiac end of the gullet is very close. In one instance the patient could retain about 1½ ounces, any larger quantity being rejected. But this amount, taken frequently, was retained, and the diagnosis thus established. This was confirmed by operation.

In another, with obstruction at the cardiac orifice, I found, on performing gastrotomy, only a small portion of the stomach free and available for establishing fistula. I have no doubt that we had entered the stomach through the oesophagus, and that the inability to retain the fluid was due to the reduced capacity. After the operation we were never able to introduce more than two ounces at a time.

Of oesophagoscopy I have no personal experience. Its value was recently demonstrated to me by Professor Mickulicz, of Breslau, who showed me a case of actinomycosis recognized by this method. A peice of growth was removed by forceps and examined.

I may summarise the diagnosis in the following way:

1. Among early symptoms we may base so-called "dyspepsia," nausea, and repulsion for food; pain alone when the central district is affected.
2. That the passage of a bougie is the only way to clear up the case, and that its employment need not be feared.
3. That extra-oesophageal disease rarely gives rise to serious dysphagia.
4. That spasmodic obstruction, apart from the hysterical form,

has always, when decided, an organic cause, and that this would be better called intermittent dysphagia.

5. That with regard to the special districts it may be said :

a. That all organic obstruction in the upper third is malignant, and has a special tendency to cicatrise.

b. That in the central half of the gullet, a sarcoma or a myoma, both rare diseases, may cause fatal obstruction ; that here, also, a pouch may give rise to difficulty in diagnosis, but can generally be excluded.

c. That in the lower end alone does simple stenosis occur, and that here there may be difficulty in distinguishing from cancer of the stomach causing great reduction of the cavity (leather-bottle stomach).

Finally, in estimating the extent of the disease, the special value of the steel bulb is noted, and also the use of the Coude bougie in obstruction at the lower end.

Treatment.—Speaking generally, it may be said that we can relieve by mechanical means only, and that two methods are available, one to overcome obstruction by inserting a tube of some kind, and the second to open the stomach below the obstruction, i. e. perform gastrostomy.

I would put the general question of treatment in the following way, as applying to all cases :

1. While the patient can swallow fluids and semi-solids, and while a bougie can be passed and plenty of nourishment taken, he may be left, so long as :

a. He can swallow well,

b. A small bougie, No. 12 (catheter gauge), can be passed.

2. If the dysphagia increases, even though a bougie can be passed, then a tube must be inserted or gastrostomy performed. These conditions are seen in the soft fungating forms.

3. If a bougie cannot be passed, or goes with difficulty, then the same course must be followed, as we know that complete closure may occur at any time.

4. If both conditions arise, i. e., the patient cannot swallow and a bougie cannot be passed, then immediate mechanical treatment is required.

Probably most have summarised their treatment in some such fashion.

I have not advocated the passage of bougies with a view of dilating the stricture. It is injurious in that it irritates and leads to in-

crease of obstruction; it may split a hard stricture and set up rigor and fever from absorption. In my own practice, I have abandoned this method in all malignant cases. The object of the small bougie to which I have referred is simply to secure the route so that at any time a tube can be passed for feeding purposes, or the time fixed for gastrostomy. More than this has, in my experience, proved injurious. As applying to all cases, I would here again refer to the advantage of attempting the passage of a tube after a night's rest and a dose of opium.

Turning next to each region, in the upper third we have to note the great tendency to rapid closure and to the certainty of complete obstruction sooner or later. Two methods are available here: (a) the long feeding-tube, and (b) gastrostomy. Though I have successfully employed a short tube, it does not, as a rule, rest comfortably unless the highest part of the stricture be at least $1\frac{1}{2}$ inches below the cricoid. Of the long tubes, the best is that made from rubber drainage-tube, introduced by the whalebone director. When this cannot be passed, the retention of a silk-web tube for a few days will so enlarge the passage as to enable the other to be inserted, or an ordinary urethral catheter will answer, and sometimes the Conde variety will pass. If the patient be fairly tolerant, the method is a useful one. The tube will last a long time, so much as nine months. If it comes out, it can always be replaced if the attempt be made at once. Should the tube, when rejected, be soft and have lost its elasticity, then a fresh piece must be used. It should never be removed for cleaning, as re-insertion may be difficult. I have conducted many cases to the end with this tube; the main objection is that saliva cannot, as a rule, be swallowed, though some patients will sip fluid by the side of the tube.

Another objection is that it does require some dexterity, perhaps, to insert in difficult cases, and much patience, but not more of either than does the passing of a catheter in stricture of the urethra. The form I have for many years used is, as you see, somewhat roughly made, the end of a piece of ordinary No. 10 drainage tube being sewn up with silk, and a big eye cut above. Note that the end of the introducer is passed into the eye, and a small plug of wood is inserted into the closed end to prevent the introducer slipping through. The proof that the thinnest-walled rubber tube would keep a malignant stricture dilated was first pointed out by Mr. Berry. We must contrast this method with gastrostomy, and I would say that where the patient is low and unable to bear abdomi-

nal section it is our only plan. As an alternative, I find it has sustained life in comfort equal to the most successful gastrostomy, and greater by far than when the stomach contents escape and cause excoriation. When the patient is intolerant and objects, then we can offer only gastrostomy. The longest time I have known one of these rubber tubes remain unchanged was thirteen months. The obstruction was at the circoid, and great difficulty was encountered in passing the first long feeding-tube. The rubber form was easily introduced after a few days' residence of the silk-web tube. From time to time small pieces of the rubber tube had to be removed, as it split near the silver canula. The patient died with the original tube in position. Others have worn it for varying periods. In two cases patients have also worn tracheotomy tubes. One now under treatment has had a rubber tube in eleven months and a tracheal tube four and a half months. The same method answers admirably in disease of the pharynx. In this form the obstruction to a bougie is never very great, and I have had cases fed by a member of the family three or four times a day. Its application is limited. After many trials, I have no doubt that the best tube is the gum-elastic silk-web, with a closed end and two large eyes, and that the best sizes are Nos. 10, 12 and 14; smaller ones are of little use for permanent wear, and dilatation up to 12 is best conducted by the long tube. The vulcanite pattern introduced by Renvers I have found of no value; it is too hard and too short. The most suitable cases for this method are those where the stricture is short, and has a tendency to contract; then a four-inch tube answers admirably. The position and length of the stricture are ascertained by a steel bulb. As the disease progresses it may be necessary to use a six-inch tube.

In the central portion, i. e., for obstruction occurring from a point ten inches from the teeth to fourteen and one-half inches, we can use a short tube in addition to the long one. When introducing this method in 1884* I said I hoped it would give relief in a certain number of cases, and it has fulfilled this forecast and no more.

The experience published in two former papers† represent very well the use and value of the short tube, and later experience has confirmed it. Of recent cases I may cite the following:

A man aet. 55. Dysphagia began early in 1898.

*Clin. Soc. Trans., vol. xviii.

†Brit. Med. Jour., April, 1887; *Lancet*, March and April, 1889.

February 24th, 1899.—A short tube was inserted, the stricture, a short and contracting form, being fourteen inches from the teeth.

April 21st.—The tube removed at patient's request; great difficulty in inserting another.

May 2nd, 1899.—A tube inserted.

July 28th, 1899.—A new tube introduced by Steward.

March 3rd, 1900.—The tube was still in and acting well, i. e. over seven months.

Some time later he showed signs of extension to the lung, and died on June 3rd, 1900.

Duration before tubage, twelve months; duration under tubage, sixteen months. Of these certainly thirteen were passed in comfort; and he attended to his business.

In another case the short tube acted perfectly up to the time of death, the treatment covering a period of more than a year.

Disease involving the lower end and cardiac orifice I have found difficult to treat by tube. I admit that occasionally one has been successful with a short tube or a long one, but as a rule it is rejected on account of the contraction of the diaphragm. Early gastrostomy seems to me the best advice. I advise that this be done while the patient's general condition is good. One very strong point in favor of this course is that, as I have said earlier in this paper, simple stenosis may occur in this situation. Given, therefore, a successful gastrostomy, life may be indefinitely prolonged. Moreover, it may be possible, especially with the Coudé bougie, to dilate the obstruction after the gullet has had a rest. We may at least anticipate some return of swallowing.

Of course, as in other situations, operation would not be undertaken so long as a bougie could be passed and the patient could swallow freely.

Early gastrostomy applies especially to malignant disease in this situation.

I must mention one remarkable case referred to before. A woman with great dysphagia, emaciation, and obstruction at the lower end. A Coudé bougie could be passed. As she lived in the country, and as dysphagia was increasing, I performed gastrostomy. From that moment the power to swallow returned, and the secondary stage of the operation was completed. It has not been necessary to use the stomach opening. The woman remains so well—now more than a year from the operation—that I think the case must have been one of simple obstruction. Dila-

tation could not have been effected by suturing the stomach to the abdominal wall, and the only other suggestion one can offer is that a tortuosity has been straightened.

In view of the occasional occurrence of simple stenosis at the cardiac orifice, it seems to me our duty to press operation upon our patients when the dysphagia is marked.

The use of chloroform to facilitate the introduction of a tube is a question for discussion. Personally I have always had an objection to it, but I must admit that in cricoid strictures it has been of great service, and deserves a wider employment. So easy is it, however, to pass a small bougie or tube into the trachea, that I make it a rule, after passing a tube for twelve inches, to examine with the laryngoscope to see that it is really in the oesophagus. In one case, when this precaution was omitted, after waiting some time and there being no spasm or cough, milk was poured down and passed into the lung with disastrous consequences.

In another the tube passed through a tracheal fistula.

Reviewing the whole question of treatment and contrasting tubage and gastrostomy, one may say as regards the latter that it at once disposes of all difficulty as regards swallowing; that in obstructions at the cardiac end it should be performed early; that in all patients intolerant of the tube and bougie, time should not be wasted. In advanced cases, where leaking can be prevented and immediate feeding undertaken, the operation may be successful, and there is reason to expect that such a method has been found.

Unfortunately, many cases among the poor are obtained in too advanced a stage for operation to be considered, and there are others who decline operation. It, therefore, is necessary to perfect, as far as possible, the alternative method of tubage. With regard to cricoid strictures and disease in the lower part of the pharynx, I am quite satisfied with the rubber tube, and believe it to be superior to gastrostomy. We want a tube so constructed that it will not easily be regurgitated, and I believe this will be produced. Once a tube has been retained it is never wise to dispense with it, even for a day. I have several times yielded to the patients' wishes in order that they may enjoy the luxury of a solid meal and been unable to re-insert another tube. The insertion of the new tube should immediately follow the withdrawal of the old one, be it a short or a long tube.

The short tube has, as I said, a limited use, being of little service in disease of the two orifices. But in the central section I

still find it valuable. It is open to the objection that it is liable to get blocked, and that, again, some skill is required to insert it. With cases where there is no cough I have known it to remain unchanged for ten months, and in another three months. There is no necessity to remove these tubes for cleansing purposes, the silk, protected as is now done by fine rubber tubing, will last for months, and the security of the silk is the only anxiety.

When cough arises from extension of growth, or hemorrhage occurs, the tube will get blocked, and then a long feeding-tube must be used—either a silk-web or a rubber. It is unnecessary on this occasion to go into details, so I will put the question of tubage thus:

The short tube is useful in strictures occurring from a point ten inches to a point fourteen inches from the teeth. It is no use when there is cough on swallowing, indicating perforation. It is of little value when the growth occupies a long stretch of the gullet. It is seldom of use in strictures involving the cardiac orifice, and cannot, as a rule, be borne in disease involving the cricoid level.

In suitable cases it has, however, given good results up to the time when perforation occurs, and then, as a rule, a long feeding-tube answers for the few weeks that remain.

A word must be said as to the dangers of intubation. One has had accidents, fortunately in only one was life much shortened. In one case a tube was passed, under chloroform, through a perforation into the trachea. This showed the danger of chloroform.

In another a soft and ragged oesophagus was perforated, the man being in the last stage of the disease.

In another a tube in the tight cricoid stricture passed into the trachea; the man did not cough, and gave no sign that such an accident had occurred until signs of pneumonia developed.

These accidents occurred some years ago, when one was endeavouring to improve the method of treatment. Since one has systematically used the laryngoscope to ascertain the position of the tube in cricoid strictures, several similar accidents have been avoided. It is essential to use this check when operating under chloroform.

SUMMARY OF TREATMENT.

1. In cricoid obstruction the long rubber tube gives excellent results. When not well borne, gastrostomy, if selected, should be performed early.

2. In disease of the central portion the short tube is serviceable in a fair number of cases, and, when it acts well, is superior to any other method. It must be replaced by the long feeding-tube when pulmonary symptoms arise.

3. In disease of the cardiac orifice tubage is so uncertain that gastrostomy should be performed when dysphagia becomes serious.

Dr. Herbert Tilley: I think that most members will agree with me that the term "classical" is one which might well be applied to the address that Mr. Symonds has given us on the subject of the diagnosis and treatment of malignant stricture of the oesophagus. His experience in this class of cases is so unique that anything which others may say on the matter can only be in the nature of accentuating facts which Mr. Symonds has already brought forward. I will not attempt to do more than this. I wish to bring before the notice of the society two cases which seem to illustrate the apparent simpleness of some of the symptoms which are so easily overlooked in the early stages of malignant stricture of the oesophagus, and to which Mr. Symonds has referred in the early part of his address.

The first case was seen some four years ago in University College Hospital. A middle-aged man was admitted to a medical ward suffering, or supposed to be suffering, from ulcer of the stomach. The patient had been brought in complaining of acute pain in the stomach, and on three or four occasions he had vomited large quantities of blood. He was very anemic, and in the absence of any physical signs in the chest or stomach, it was very difficult to say what organic lesion was present. He took food well, and had no difficulty in swallowing; these were puzzling features of the case. I was given an opportunity of examining the patient, and found that although the voice was fairly clear, yet the left vocal cord was paralyzed. Of this, there were no symptoms so far as the voice was concerned. On further examination I saw, about three inches down the trachea, a small, pale, nodular mass projecting into the lumen of the trachea. On the strength of this observation I made the diagnosis of malignant disease, probably of one of the mediastinal glands, the enlargement of which had obstructed the trachea. As to whether that gland was a secondary growth no one could say, for the simple reason that there was no evidence of any primary growth in the oesophagus or elsewhere. In the course of a few days the man died from another attack of severe hemorrhage. At the post-mortem examination a

malignant ulceration of the lower end had caused any obstruction, and the gland I had seen projecting into the trachea was a secondarily infected mediastinal gland. The case is extremely interesting as illustrating (1) how frequently such symptoms may mislead as to the true nature of the case, and (2) the light which may be thrown on an otherwise obscure case by means of a laryngoscopic examination.

The second case was seen about two months ago. The patient, a man aged 51, had lost his voice for two months, and complained of certain stomach symptoms, e. g. flatulence, anorexia, inability to swallow solid food, because it immediately induced sickness, etc., and his illness had been attributed to "gouty oesophagitis," whatever that might mean. For some twelve months he had been complaining of a feeling of sickness after taking food. On examining the larynx, I found complete bilateral recurrent paralysis; the patient could only speak in a whisper, and had a very distressing and ineffectual cough. On examination of the chest, no evidence of aneurysm could be found. Attempts were made to pass oesophageal bougies, but the smallest one could not be passed beyond the level of the lower end of the manubrium sterni. I therefore took this to be a case of malignant disease of the oesophagus. A fortnight later I saw the patient again, and on further examination found above the manubrium sterni and in the region of the left lateral lobe of the thyroid, a stony hardness, and many small enlarged cervical glands above the clavicles. The patient died a few days after the consultation, and unfortunately no post-mortem was obtainable, and it was therefore impossible to be sure as to the situation of the primary growth, i. e. whether it was in the thyroid gland and involved the gullet, or vice versa.

These two cases illustrate the fact that sometimes one may get invaluable information as to the cause of the patient's symptoms by the use of the laryngoscope. In both the cases briefly outlined, the suspicion raised by finding the vocal cords paralyzed was the main factor in the formation of a correct diagnosis. My experience has been very much in accordance with that of Mr. Symonds with reference to an apparent oedema of the upper end of the oesophagus, which occurs most commonly in young females suffering from malignant disease of the oesophagus in the neighborhood of the cricoid cartilage. I remember seeing two young women, one aged 21, the other aged 28, in which this curious oedema of the upper end of the oesophagus was followed very shortly afterwards by death from malignant disease in the situation referred to.

(To be continued.)

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It is our purpose to furnish in this Department a complete and reliable record of the world's current literature of Rhinology, Laryngology and Otology.

All papers marked (*) will be published in abstract in THE LARYNGOSCOPE.

Authors noting an omission of their papers will confer a favor by informing the Editor.

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SELECTED ABSTRACTS.

My Method of Operating in Chronic Empyema of the Maxillary Antrum.—DR. GERBER (Konigsberg i Pr)—*Deutsche Med. Wochenschrift*, Nov. 27, 1902.

After describing the unsatisfactory results of other methods tried by him, the author comes to the conclusion that the most effective method is to open the antrum broadly from the canine fossa, and then make a counter-opening into the nose in the middle meatus. The antrum is thoroughly curetted and cleaned out and the canine wound immediately closed. The middle fossa is chosen, as offering a better chance for a large opening into the nose, through which permanent drainage may take place.

VITTUM.

A Case of Accessory Thyroid at the Base of the Tongue.—DR. FRIEDRICH TEWELES.—*Weiner Klin. Wochensh.*, No. 8, 1902.

The patient was anemic, weak, exhausted by the least exertion. The tumor, which was 5 cm. in diameter, was removed per orem. When the tongue was strongly pulled forward the tumor slipped under the soft palate, and the field of operation was very accessible. Hardly any blood was lost and recovery was rapid. The patient's general condition is greatly improved. The tumor was spherical in shape, with a tough capsule of connective tissue. On section there was discovered a yellow hard nucleus the size of a bean, from which fibrous bands radiated in every direction. The parenchyma was reddish-yellow and did not ooze at any point. The tumor was traversed by numerous blood vessels.

The microscopic picture was that of a thyroid gland. Follicles crowded close together and covered with a flat epithelium, sometimes with and sometimes without a lumen, but nowhere containing colloid material. Between the groups of such follicles, run bands of connective tissue and capillary vessels.

VITTUM.

The Submucous Alveolar Tissue of the Larynx, and its Significance in the Spread of Oedema.—*Edin. Med. Jour.*, May, 1902.

This paper commences with a description of three cases of edema of the larynx, one of which proved rapidly fatal. In this case the patient suffered from pulmonary and laryngeal tuberculosis and death occurred suddenly from acute edema of both aryteno-epiglottidean folds, completely occluding the upper laryngeal aperture. In the other two cases, sacrifice of the edematous areas, relieved the symptoms. The second part of the paper deals with an anatomical investigation into the arrangement of the submucous tissue of the larynx, demonstrated by means of a series of injection experiments. Carmine gelatine was used for purposes of injection, as this substance was found to permeate the tissues readily when heated, and to set quickly when cooled. In this way the extent and limitations of the loose submucous areolar tissue in the glosso-epiglottic fossae, in the aryepiglottic folds and pyriform sinuses, in the false cords, the true cords and in the subglottic area, were demonstrated. The opposition offered to the passage of the fluid over the free margin of the epiglottis by the attachment of the mucous membrane along that border and the lesser degree of resistance presented by the denser layer of tissue beneath the median glosso-epiglottic and pharyngo-epiglottic folds were also well illustrated by the injection experiments. A number of plates demonstrate these anatomical points.

A. LOGAN TURNER.

The Anti-toxin Treatment of Diphtheria in the City of Glasgow, Fever Hospital, Belvedere, during six and a half years.—JOHN BROWNLEE (Glasgow).—*Glasgow Med. Jour.*, April, 1902.

The author has devoted considerable care to the compilation of a number of tables, a study of which will repay the reader who is interested in the antitoxin treatment of diphtheria. It is difficult to make any detailed analysis of these tables, but there is no doubt of the value of the remedy and of the decrease in the mortality from this disease.

A. LOGAN TURNER.

The Treatment of Thrombosis of the Lateral Sinus Following Middle Ear Suppuration.—E. B. DENCH, M.D., New York, *The Am. Jour. of the Med. Sciences*, May, 1902.

After reviewing the various steps by which operative procedure in the mastoid was advanced from the simple perforation of the cortex by a drill to the extensive exposure of the lateral sinus, which steps towards radicalism were attended rather with increased recoveries than mortality, the bold operator arrives at the conclusion that not only is the wounding of the sinus a comparatively trivial matter, but that the fatalities ascribed to this accident were most frequently due to the stopping of the operation before the evacuation of the purulent focus within the bone. With a small opening the hemorrhage could not be controlled, whereas with the mastoid cortex entirely removed, it on oppression was easy by pressure, the operation proceeded with the purulent collection evacuated and the patient relieved. Gradually the operator became more daring, and when the sinus was exposed, during the operation, it was carefully inspected and examined for evidences of infection. This was more emphatically the case when the temperature seemed to indicate severe systemic infection. When the sinus was found to contain a clot it was turned out, the sinus wall curetted for the removal of any possible source of systemic infection, and the hemorrhage controlled by firm, aseptic packing. In spite of such radical action in the neighborhood of the mastoid a large proportion of cases of invasion of the lateral sinus terminated fatally, or recovered after a serious general pyemia. Ballance concluded that the direct anemia of infection from the breaking down of the thrombus in the lateral sinus, was through the internal jugular vein, proposed and successfully accomplished the ligation of the blood channel completely shutting out the source of infection. Following this plan some surgeons simply ligated the internal jugular; others divided the vessel between two ligatures, and attempted to wash out the thrombus by irrigation from the sut end of the jugular up through the sinus wound. A further advance led to the ligation of the tributaries of the internal jugular, and finally to the excision of that vessel from a point low down in the neck to a point just below the entrance of the vein into the base of the skull, all tributary branches being tied off. This latter procedure seems to be the one of election to-day.

The author thinks it "wise in all doubtful cases to remove the internal jugular vein in order to eliminate the element of draft."

but that when "the patient has been under observation for a few days, and we have a fairly complete temperature record of 24 to 48 hours, showing no marked evidences of systemic infection, the surgeon may rely upon simple clearing out whatever clot may be found." On the other hand cases seen first at the time of operation, in which the sinus cannot be cleared, and in which the surgeon is confident that a certain amount of infected material is left in the venous channel, immediate excision of the internal jugular should be practiced. The operation is not considered a serious one and consumes but little time. The temperature chart is the only sure guide. F. C. E.

Two Cases of Laryngeal Hemorrhage.—M. ANDERODIAS.—*Gaz. Med. de Picardie*, No. 2, July 12, 1902.

Congestive or neuropathic hemorrhages of the larynx are rare as compared with the submucous interstitial hemorrhages which are met with in variola, scurvy, purpura and Bright's disease.

The author claims that this form of hemorrhage is found only as the result of traumatism and that most frequently the flow of blood is from varicose veins at the base of the tongue, or from the naso-pharynx, the hemorrhage sometimes being sufficient to simulate hemoptysis. After having called attention to the necessity of accurately locating the hemorrhages, the author reports two cases.

The first was in a man of 52 years, suffering from Bright's disease, who was suddenly seized with an attack of complete aphonia, moderate dyspnoea and a light spitting of blood.

An examination showed the larynx to be of a dark red color. The mucous membrane of the epiglottis very congested, the ventricular bands swollen, and the vocal cords in the median line and covered with clots. The lingual tonsil showed neither varices or hypertrophy. After having removed the clots the author could locate the blood oozing from the border of the left ventricular band. After cauterizing with chloride of zinc, inhalations, and especially perfect rest of the throat, the hemorrhage ceased, the congestion diminished and the dyspnoea disappeared.

The author suggests that laryngeal hemorrhage may perhaps be of the same diagnostic value as epistaxis is a symptom of the early stages of chronic nephritis.

The second case was in a man of 53 who had reached the cachectic stage of cirrhosis of the liver, the author believing the hemorrhage to be due to derangements of the hematopoietic function of the cirrhotic liver.

W. SCHEPPEGRELL.

BOOK REVIEWS.

The Practitioners' Handbook of Diseases of the Ear and Nasopharynx.

By H. McNAUGHTON JONES, M. D., W. R. H. STEWART, F. R. C. S. ED., WILLIAM MILLIGAN, M. D., C.M., HERBERT TILLEY, M. D., AMBROSE BIRMINGHAM, M. D. and ROBERT DWYER JOYCE, F. R. C. S. I., M. R. C. S. Octavo 366 pages. 182 illustrations and 7 plates. Price 10 shillings, 6 pence Net. Published by BAILLIERE, TINDALL & COX, London, 1902.

In this era of lengthy treatises and voluminous text books, it is a pleasure and relief to peruse the pages of this excellent handbook. It is concisely written, well illustrated, thoroughly up-to-date and contains more practical and valuable information concerning diseases of the ear and associated areas than any volume of its size.

In this sixth edition the editors have had the co-operation of a number of authorities who have been specially qualified to prepare the chapters assigned to them. Prof. Birmingham and Dr. Dwyer Joyce have prepared the chapter on the Applied Anatomy of the Ear; Mr. W. R. H. Stewart the chapter on the Middle Ear Cavity; Dr. William Milligan, the Chronic Suppurative Middle Ear Diseases including diseased conditions of the Mastoid and Intra-Cranial complications, and Mr. Herbert Tilley, the Accessory Cavities in their association with the organ of hearing. Dr. Dudley Buxton has prepared a condensed and acceptable chapter on the administration of anaesthetics in nasal and aural surgery.

While this excellent volume is modestly termed "The Practitioners' Hand-Book", it may with justice also be called "The Otologists' Reference Book." Thoroughly modern and up-to-date. We commend it most highly.

PROGRESSIVE MEDICINE, VOL. III, SEPTEMBER, 1902. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M. D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Octavo. Handsomely bound in cloth, 421 pages, 26 illustrations. Per volume, \$2.50 by express prepaid to address. Per annum, in four cloth-bound volumes, \$10.00. LEA BROTHERS & Co., Publishers, Philadelphia and New York.

This quarterly issue of Progressive Medicine contains valuable chapters on the pathology and clinical varieties of Croupous Pneumonia and its most approved and modern therapy. A most interesting chapter is that referring to the British Congress on Tuberculosis, and separate chapters on the sanatorium treatment and the study of the cure of consumption.

Diseases of the Pleura and Bronchial affections and their treatment, and the affections of the pulmonary blood vessels and of the pulmonary circulation, complete this series of valuable chapters.

In the chapter on Diseases of the Brain, the author reviews Tumors of the Frontal Lobe with report of cases, Sinus Thrombosis and several Forms of Aphasia.

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ORIGINAL COMMUNICATIONS.

(Original communications are received with the understanding
that they are contributed exclusively to THE LARYNGOSCOPE.)

THE NEIGHBORING PARTS OF THE MIDDLE EAR AND THEIR INFECTION.*

BY OTTO J. STEIN, M.D., CHICAGO.

Professor of Nose, Throat and Ear Diseases, Post-Graduate Medical School; Associate
Professor of Nose, Throat and Ear Diseases, Illinois Medical College, Chicago.

The purpose of this paper is simply to renew your acquaintance with the anatomical surroundings of the middle ear. The lesson cannot be heard too often or learned too well. With our increasing observations and broadening experiences in cases of infection of the middle ear and its adnexa, the facts emphasize themselves more clearly on our minds of the absolute necessity of a most minute and perfect comprehension of the architecture of the temporal bone. Knowing this, we are in a position to interpret signs that are not always typical or classical of the so-called mastoid diseases, but with a less perfect understanding of the anatomy might be passed over lightly, or perhaps not recognized at all, when, in reality, we have going on some place or other in the temporal bone a process so destructive and virulent that at most any moment a life might be sacrificed.

With this knowledge perfected as far as possible, we know when to interfere surgically, where to go and how far to go. With a perfect knowledge of this subject, no otologist of to-day stops at a Wilde's incision in any case of mastoid disease aside from a periostitis.

A more comprehensive view of this subject might best be attained by looking at the bone at the very beginning of life, and thus following its growth through its various developments.

*Read at the Seventh Annual Meeting of the Western Ophthalmologic and Oto-Laryngologic Association, held at Chicago, April 10-11-12, 1902.

Morphologically, we have the ear bone made up of two parts, the auditory part, or so-called labyrinth, and the accessory parts, consisting of the auditory canal, tympanum, ossicles and Eustachian tube.

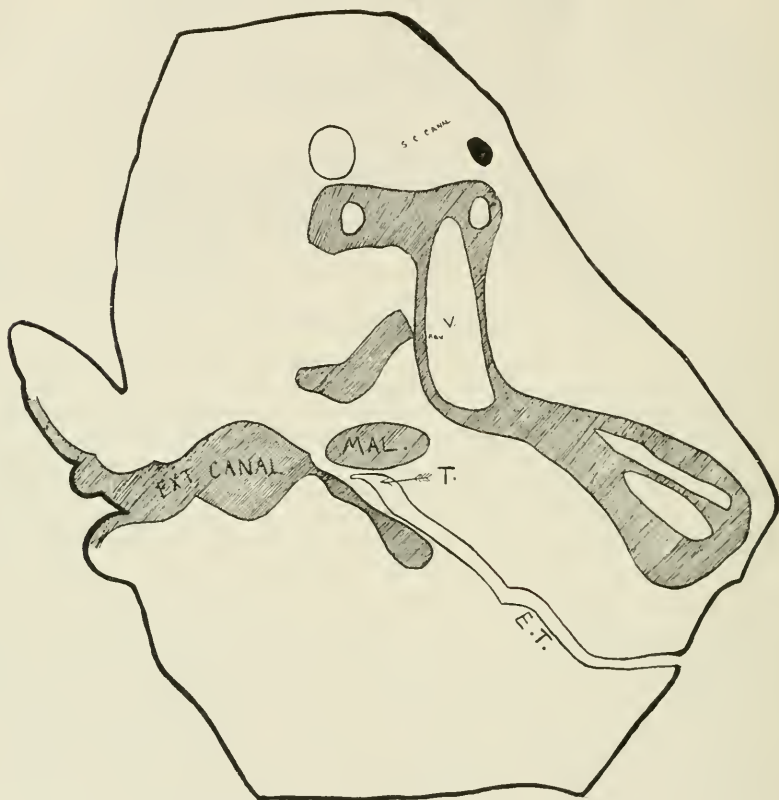


Figure I.—Ear of Human Embryo. (Minot's Embryology.)

Studying the drawing shown here, see Fig. I., (taken from Minot's Embryology), which represents a human embryo at three months, note that the tympanum is a small flattened cavity and a blind dilatation of the Eustachian tube. The auditory canal extends much below it, and its walls are in apposition, but soon begin to separate by the accumulation of epithelium and wax. Just above the tympanum lies the malleus and the other ossicles. Note that these lie outside of the cavity of the tympanum embedded in a mass of embryonic connective tissue, which gradually atrophies so that at or shortly after birth it has entirely disappeared; the tympanic cavity thus develops around the ossicles.

At birth ossification has advanced sufficiently so that we have an incomplete ring of bone, called tympanic ring, forming part of the outer wall of the tympanum. Within this ring is inserted the drum membrane. From it, as a starting point of development, we derive our bony external auditory canal. Growing outward, as it does, it replaces the fibro-cartilage that forms the canal at birth. The deficiency in the ring above is supplied and filled in by the growth of the horizontal portion of the squamosa, another separate point of development.

The mastoid portion of the temporal, practically absent at birth, although in some cases seen by me marked evidences of it were observed, develops from the petrous portion, and its anterior superior part from the vertical plate of the squamous.

The lines of union between these several parts are known as the squamo-mastoid and petro-squamous fissures, and they constitute very important structures and land-marks, as will be referred to later on.

Owing to the absence of the mastoid at this time, of course we can have no series of mastoid cells. However, one cell is constant: that is, the mastoid antrum. That exists already in prenatal life.

The mastoid is at first composed of fine cancellated bone tissue, and at two years of age it has established itself as a fairly well defined and distinct eminence, but no cells begin to appear until along the eighth or ninth year, with few exceptions, when the cancellated tissue gradually undergoes absorption, and in its place we have developed a series of more or less well formed cells. These cells communicate with one another and sprout, as it were, from the parent cell or antrum, gradually pushing themselves downward to the very tip, backward in some cases to the very margin of the parietal bone and sigmoid sinus, forward close to the wall of the external canal, inward beyond the plane of the digastric fossa, and upward in the squamous bone above the external meatus and even forward into the posterior root of the zygoma.

Scarcely too much thought can be given to the study of the development, character and location of these cells. A thorough knowledge of them gives you the key to the entire subject of mastoid disease.

By referring to the X-ray picture, (see Fig. II) these various points are beautifully demonstrated.

In order to obtain this picture, it was necessary for me to make

very thin sections of the dried specimen of the temporal bone. They were made with a Gigley saw, in the vertical plane, and about one-eighth inch thick. This exposed clearly every detail of the interior of the bone. The mastoid antrum and cells, and also the sigmoid and lateral sinuses were then painted with white lead, a piece of wire placed along the course of the facial nerve and the various sections were then glued together.

The external appearance of the bone is not always an indication of its interior. The removal of its outer plate does not always determine the conditions further within. Not any more so than the absence of swelling and redness of the overlying soft parts being a negative indication of destruction within the temporal; for you all know that we may have marked involvement of the entire mastoid process going on in some cases to great disintegration of tissue, and even to the formation of brain abscess or sinus complication, without any marked external manifestation.

Therefore, when armed with scalpel and chisel, we enter into the substance of the temporal bone, we should know what its make-up might be, where we must penetrate to find collections of pus, what we must avoid and the possible avenues by way infection might travel to neighboring parts.

Let us look at the subject from the side of the operator, i. e., from without inward. If you have determined to operate in a given case, the approved and accepted plan is to go straight for the antrum, excepting in cases of periostitis and in pus collections external to the bone from a dissection of the pus along the auditory canal from the middle ear. From this cell as a starting point, we commence our exposure of all the cells that appear to be, or we have reason to suspect may be implicated in the diseased process. Here is where a comprehensive knowledge of their exact location is of the utmost value. Those cells located in the lower portion of the mastoid process are easily exposed to view. They may be found as far down as the very tip of the process and extend as far back as the temporal suture, and virtually surround the sigmoid sinus.

Next, if necessary, work upward and forward to the cells often found well developed and located above the auditory canal, and even, in some cases that I have seen, in the posterior root of the zygoma.

Then, investigate the condition of that series of cells found internal and beyond the digastric fossa, and those posterior and behind the antrum.

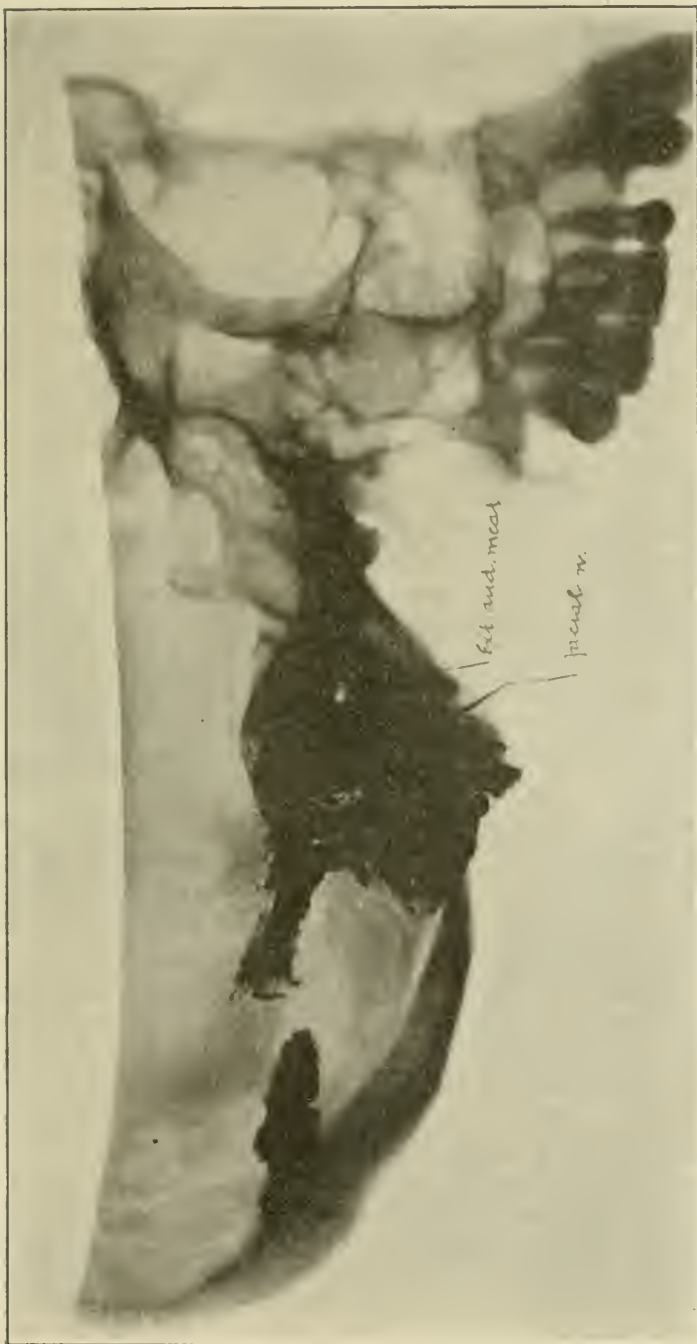


Figure II. For description see opposite page.

It is to be remembered that the structure of the outer portion of the mastoid gives no definite information as to the structure of the bone further within. The outer half may be ebonized, and suddenly you appear in a large cavity, as seen in a case of mine. Or just the opposite, the outer part may be pneumatic and within it may be sclerosed or diploic. In other words, the bone may be made up as a whole of either diploic, pneumatic or sclerotic bone tissue; or it can be a combination of any two or all.

Again, the position of the more important structures adjacent to the antrum and its cells may differ in individuals to such an extent as to make anything like an extensive operation impossible, owing to the danger of injuring some one of them. The appearance of dense white bone within the field of operation will, in most every case, warn one of the immediate proximity of the Fallopiian canal, containing the facial nerve, and of the sigmoid sinus.

There are some specimens, and also cases on record where the sinus lies directly within the field of operation, so that exposure of the membranous canal is really unavoidable. It is true these cases are very few, but it is a contingency that must be looked for.

Broca, in almost 200 operations, failed to find such a condition and expresses himself by saying that he does not think that there is an antrum that cannot be entered without exposing the sinus.

The most dangerous point for finding such a condition lies directly back of the antrum. The nearer we approach the tip, the less likelihood of injuring the sinus.

This sinus, as you know, is the continuation of the lateral sinus, which makes the cycle of the intra-cranium from the Torcular herophilii posteriorly along the attachment of the tentorium cerebelli to the base of the petrous bone. From here the sinus makes a sudden bend downward, forward and inward in an S-shaped manner, and then abruptly doubling upon itself, it leaves the intra-cranium by a large dilatation in the bone at the base known as the jugular fossa.

From the description of the course of these sinuses, it will readily be seen that the lateral sinus is in close contact with the contents of both the cerebellar and the posterior cerebral fossae, while the sigmoid sinus is in contact only with the cerebellar fossa. At the point where the lateral sinus bends to form the sigmoid is to be seen an opening, usually quite large, this is the entrance of the mastoid vein, which penetrates the mastoid portion of the temporal to the outer surface.

Where the tentorium cerebelli is attached to the superior border of the petrous bone we have another very important sinus, the superior petrosal. This sinus empties into the sigmoid at a point near its origin, and has its source from the cavernous sinus towards the apex of the petrous bone. Thus it will be seen that it traverses the floor of the middle cerebral fossa above the middle ear and antrum.

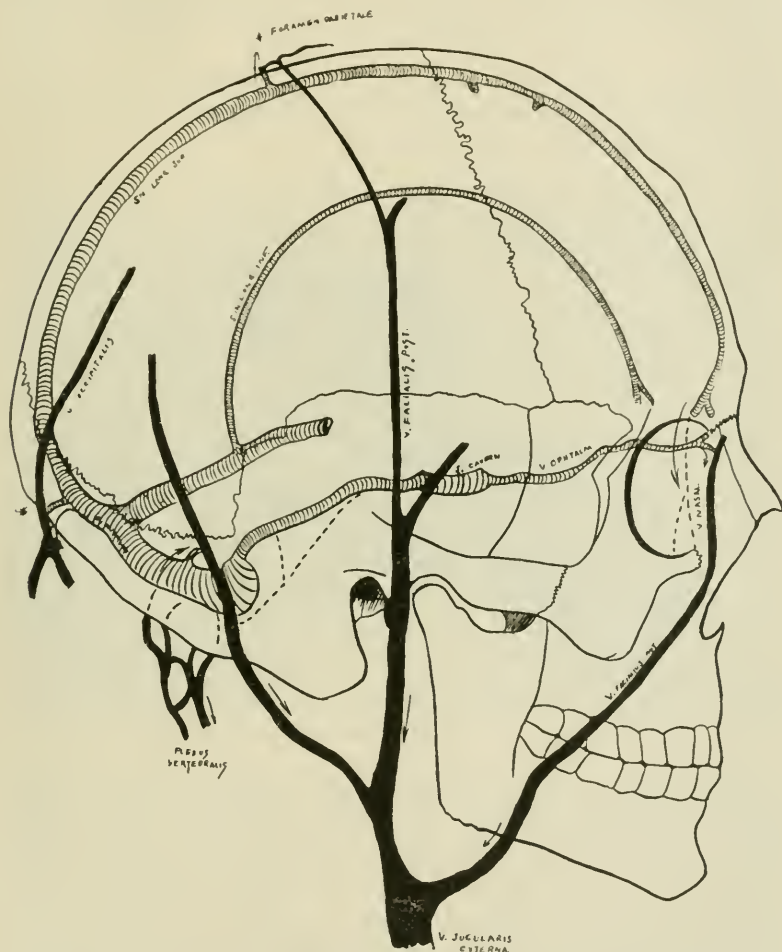


Figure III.—Showing the relationship of Venous circulation to Cranial Sutures and Ear. (Hermann's Anatomy.)

The cavernous sinus is a short, although large and very important venous channel lying at the side of the sella turcica. It connects with its fellow on the opposite side by way of the circular and trans-

verse sinuses. The vessels tributary to it are the, 1 superior and inferior ophthalmic veins; 2 sphenoparietal sinus; 3 central retinal vein, and 4 inferior anterior cerebral vein.

It empties itself, as I have already mentioned, in one direction by way of the superior petrosal sinus. In another direction it empties into the internal jugular vein by way of the inferior petrosal sinus, and again into the anterior vertebral plexus by way of the basillar plexus. For an illustration of these various sinuses see Fig. III.

Aside from all these main routes mentioned in the case of the various sinuses, they have outlets in the form of minute veins communicating with the outside of the skull.



Figure IV.—The cavernous sinus and its contents. (Hermann's Anatomy.)

Lying within and passing through the cavernous sinus we have the following structures; the internal carotid artery with its sympathetic plexus, the third, fourth, sixth and ophthalmic nerves. The knowledge of all these things is of imperative importance to the otologist, for it is from the symptoms of an involvement of one or more of these sinuses complicating an ear disease that we determine just where the disease has reached and how it happened to get there. See Fig. IV.

In the very young subject, the antrum lies much higher and less posteriorly in relationship to the middle ear than we see it in more

advanced subjects. One may sometimes be misled as to its exact location in the infant, provided the temporal ridge, that guide usually selected for locating the upper limit in operating, overhangs the meatus and lies low. The size of the antrum in the child compares favorably with that of the adult. On this account, and because its depth is much less, as a rule, than in the adult, it is comparatively easy to locate.

Connecting the antrum on its anterior wall with the epitympanic cavity is a canal about 4 m.m. long called the aditus.

The middle fossa of the brain lies just above and in close relation-ship to the antrum, aditus and epitympanum. The plate of bone separating these cavities is called the tegmen. This structure is of vast importance on account of its often being the way infection enters the brain. Very frequently we find deficiencies in its development, and as a result we have only mucous membrane and dura separating the cavities of the ear from the brain.

On the inner wall of the antrum and aditus is the horizontal semi-circular canal. Passing along the floor of the aditus and in a vertical direction outward is the Fallopian canal containing the facial nerve. Lying just below and in a line with the aditus, but on the anterior wall of the tympanic cavity, is the opening of the Eustachian tube. The carotid canal lies to the median side of this tube in very close proximity—so close, in fact, that they often communicate by a dehiscence. This fact should be borne in mind in bougiering of the tube. Lying underneath the floor of the tympanic cavity is the jugular fossa. There are records of cases where communication has been established between these two cavities.

From this very brief survey of the anatomy of the neighboring parts of the middle ear, let us look at the manner and ways in which infection may reach them from this point. The manner in which involvement of such parts may take place, can be said to be by two ways: 1, by continuity of tissue, and 2, by way of blood and lymph channels, independent of, or associated with, but not dependent upon any previous ear trouble, as in case of syphilis and tuberculosis. It is only with the first that we are interested now.

Involvement by direct continuity of tissue may take place from carious destruction. This is probably the most frequent means of implication, especially in the adult, and almost always in chronic cases. In the acute forms and in children this is probably less so. Other means of involvement are numerous. It might take place by way of the numerous emissary and communicating blood chan-

nels, or by way of a lymph or nerve channel; and again, via a suture of dehiscence or a natural outlet.

In the case of the antrum and mastoid cells, the aditus furnishes the avenue through which the infection travels.

The petro-squamosal sinus, coursing along the superior surface of the petrous bone, is open in early life as a fissure, and at times exists as such in the adult, but otherwise is marked by many minute vessels. This, then, exposes the middle brain fossa to infection.

The squamo-mastoid fissure persists in children and occasionally so in the adult, and may open up a means of infection of the cerebellar fossa or sigmoid sinus.

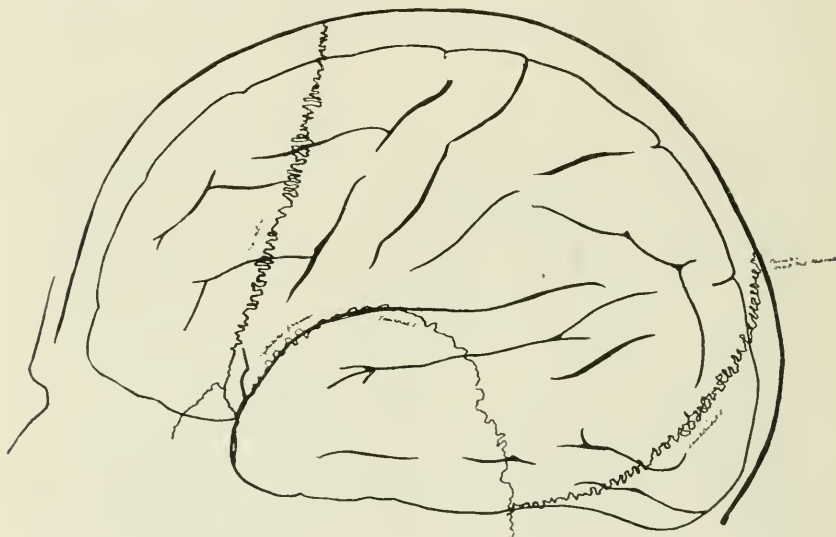


Fig. V.—Showing the relationship of the brain to the cranial sutures. (Hermann's Anatomy.)

The labyrinth is in the way for involvement by way of the oval and round windows; the former opening into the vestibule, may carry the infection out at the internal auditory meatus into the cerebellar fossa; the latter, opening into the cochlea, which has venous intercourse with the inferior petrosal and jugular sinuses.

The lateral, sigmoid and superior petrosal sinuses, the jugular fossa, the temporo-maxillary vein and the venous system of the dura all have communication with the middle ear, and its cells by means of numerous little venous vessels.

The entrance of the chorda-tympani nerve from the Fallopian canal and its exit through the canal of Huguier in the Glaserian fissure offers another avenue for infection to follow.

Lastly, I would mention that the parotid gland and the lateral wall of the pharynx may become implicated in an infective process from the middle ear, owing to their anatomic relationship to the fissure of Glaseri.

100 State St.

THE RESULTS OF TREATMENT OF LARYNGEAL CANCER BY MEANS OF THE X-RAY.*

BY D. BRYSON DELAVAN, M.D., NEW YORK.

The suggestion that the X-ray might possibly prove an effective remedy for malignant disease has aroused universal attention. During the past year series of experiments have been undertaken in all leading scientific centres and large numbers of observations have been made. The knowledge of this has not been slow in reaching the general public. Already the victims of cancer are clamoring to know whether or not the new remedy is an assured success. Their anxiety is natural, in view of the character of the disease itself, and also in view of the acknowledged danger of disaster from loss of time spent in useless experimentation when, as far as we now know, early radical operation is needed to offer even a fair chance of cure. What the X-ray itself is, or is not, how it should be applied, and what has been accomplished by it in other fields, it is not my purpose to discuss.

During the past six months we have been repeatedly importuned by sufferers from laryngeal cancer as to whether in their cases the use of the X-ray would be likely to effect a cure. The answer has always been that the study of this thing was in its infancy, and that no reliable information concerning it was at hand. Feeling that the importance of the subject warranted the attention of this Association to it, and that we should try to discover as speedily as possible whether the method could be recommended or not, I have felt justified in presenting a few notes which will suggest the actual position of the question at the present time. In order to gain the necessary information I have studied recent literature for reports of cases, have attended several meetings at which the subject was discussed, and have personally interviewed a number of the leading experimenters. I regret to report that, to the best of my knowledge, up to the present time, not a single case of carcinoma of the larynx has been reported as cured by the X-ray. Of

*Read before the Twenty-fourth Annual Meeting of the American Laryngological Association, Boston, Mass., May 28th, 1902.

several large institutions in New York City at which the X-ray is being used upon malignant cases in general, but one has had cases of laryngeal cancer. Here four cases have been treated; two, as I understand, with unsatisfactory results, and two still under treatment, showing some signs of improvement, but far from being cured.

Dr. William J. Morton has treated for me a case of advanced malignant disease of the throat, originating in the larynx, with interesting results as to the effect of the treatment upon the mass of the growth. The patient died, however, from chronic Bright's disease after about twenty applications of the X-ray. In a case of cancer of the tonsil and lateral wall of the pharynx, shown me by Dr. Morton, the results thus far seem to be excellent.

During the past three months this subject has been presented and fully discussed at three largely-attended meetings in New York City. Both meetings called out an unusually full representation of those practically interested and included leading experts from Boston, New York, Brooklyn and Philadelphia. Not a case of cancer of the larynx was reported. I am unable to find that any cases have been reported from Chicago.

Reviewing the literature of the subject, Pusey (*Journal of the American Medical Association*, April 12th, 1902), reports a large series of cases, in none of which the larynx was involved. Dr. Wm. B. Coley writes to me (May 19th, 1902): "I have tried to keep track of everything that has been published about the X-ray treatment of cancer, but thus far have not run across anything directly bearing upon laryngeal cancer. However, I do not see why the good results obtained in other localities should not be duplicated in the larynx."

Dr. Morton tells me that he is treating at present one epithelioma of the tonsil and lateral wall of the pharynx; one of the superior maxillary region following extraction of molar teeth; one of the cheek; and one of the tongue. Improvement in all of these cases is taking place.

From the meagre and fragmentary details which I have been able to secure, it would appear that no positive deductions as to the value of the X-ray in laryngeal cancer can be made until the method has been tried upon a larger number of cases than up to the present time have been treated by it. Moreover a considerable

*Dr. F. H. Williams, *New York Academy of Medicine*, Meeting March 6, 1902.

period of time must elapse in the study of a given case before it can be pronounced cured. In the general results thus far obtained such diseases as lupus and various other lesions of the surface have responded more satisfactorily than have deeply-seated malignant growths. This appears to be true of laryngeal cancer, in which the effects of the X-ray have apparently been less satisfactory than in some other directions.

In answer to the question "should the X-ray be resorted to for the treatment of cancer of the larynx" it is fair to say that with regard to inoperable cases, since much relief has been afforded in general cases of malignant disease and in the relatively few cases of cancer of the neck and throat in which it has been applied, the victim of advanced laryngeal cancer should be allowed the benefit of its use.

On the other hand, in early cases of laryngeal cancer it has always been a grave question whether any time whatever should be lost in experimentation. The universal opinion of the day is to the effect that Butlin's plea for early radical operation is correct and that little else offers even a fair chance of safety. On the other hand, it is now stated that the benefits of the X-ray treatment are likely to make themselves quickly apparent, and that a fair trial of it might be made within a period of two weeks. This being true, we may safely conclude that, in the average case, where the progress of the disease was not rapid and where a few days would have to elapse in any event between the time that the diagnosis of cancer was established and the operation for its removal actually performed, it would be entirely justifiable to submit the patient to treatment by the X-ray. The same principle is already observed in the administration of iodide of potassium for the purpose of eliminating the possibility of the local disease being due to syphilis. It is certainly not going too far to assert that it should also be carried out with the X-Ray. That the method is a specific cure for cancer has not yet been proved. Without question, however, it possesses extraordinary possibilities which cannot long remain in doubt. What is now needed is the largest possible series of carefully reported cases, and an allowance of time sufficient to prove that the new treatment is capable of complete and lasting success.

Case. S. C., aged 65, widower. Had syphilis twenty years ago. Has chronic nephritis. Is rheumatic. Voice became hoarse in February, 1901. Consulted me in November, 1901. At this time

there was a large mass, apparently epitheliomatous, springing from the right side of the larynx. There was much infiltration of the posterior commissure and beginning involvement of the opposite side of the larynx. The glands of the neck were involved on both sides, as was the inferior part of the lateral wall of the pharynx. The case was clearly inoperable, on account of the wide distribution of the disease, the condition of the kidneys and the age of the patient. In order to eliminate the possibility of the lesions being specific, the patient was placed upon the iodide of potassium in moderate doses. The result of this was promptly disastrous, for within a few days he developed sudden oedema of the larynx with urgent dyspnoea and his life was only saved by instant tracheotomy. During the winter the growth in the larynx and neck increased enormously in size. In March he was placed under the care of Dr. Morton for treatment with the X-ray. He submitted to about eighteen exposures. After the first few treatments the growth seemed less tense and began to soften at its middle and to harden at one end. Soon the entire contour of the growth seemed to change. Later it seemed that the mass was breaking up, as there was a distinct attempt at the separation of one segment of it from the other. At this period treatment had to be abandoned and the patient shortly afterwards died from Bright's disease.

There appeared to be no doubt that the mass became smaller and softer after about two weeks' treatment, and that the patient had been distinctly benefited.

1 East Thirty-third Street.

A CASE OF FOREIGN BODY IN THE BRONCHUS.*

BY F. E. HOPKINS, M.D., SPRINGFIELD, MASS.

Late in the evening of February 5, 1902, I was called by Dr. G. B. Woods, of Springfield, to see a patient who was said to have drawn a foreign body into her trachea. The patient, a girl of fifteen, while skating and carrying between the lips a pestilent toy called a squawker, had drawn it through her larynx. This toy consists of a wooden tube, two inches long, somewhat tapering, and its greatest diameter is $\frac{7}{16}$ of an inch. To the smaller end is



attached a bag of thin rubber, which is inflated by blowing through the tube. A reed is fixed over the tube so that as the air is expelled, by the contracting bag, a strident sound is produced. The dimensions of the collapsed bag of this particular toy are, length $1\frac{3}{8}$ inches, width $1\frac{1}{8}$ inches, with an average thickness of about $\frac{3}{8}$ of an inch, the whole forming a body of considerable size. The manner in which the accident occurred is of interest. A companion annoyed by the noise, had threatened to destroy the toy, when daring him to do so, she put it into her mouth and ran away laughing. The wide-open larynx and the extra deep breathing, caused

*Read before the Twenty-fourth Annual Congress of the American Laryngological Association, Boston, May, 1902.

by the violent exercise and the laughing, were an irresistible invitation to the foreign body, which shot through the larynx into the trachea, rubber end first. Dyspnea was at once most urgent and the girl was quickly taken to the office of Dr. Woods. By the time I reached the doctor's office there were short intervals of comparatively easy breathing followed by spasms of alarming dyspnea. No foreign body could be seen on examining the larynx, but the mucous membrane of the trachea was of a peculiar color, evidently stained by the coloring matter of the wood part of the toy. On examining the chest it was found that the movement of the right side was much restricted. The reason for this appears in the location of the foreign body. I interpreted the spasms of dyspnea as being due to the movement of the foreign body in the trachea, believing it was thrown up against the larynx by coughing, and that its position, together with the spasmodic closure of the larynx caused by its presence, accounted for the threatening dyspnea. It is quite possible, however, since the toy lay in the right bronchus with the open end up, that air entered in inspiration, distended the bag, and thus for the time completely closed this bronchus. The girl's condition appeared so desperate that preparations were at once made to take her to the Springfield Hospital, where Dr. D. J. Brown, surgeon on duty, performed tracheotomy. The patient took the anesthetic badly because of the difficulty in breathing. The embarrassment to respiration was much increased on lying down, and the anesthetic had to be given with the patient almost in the sitting position. When placed upon the table and the head lowered for operation, respiration wholly ceased. Tracheotomy was hastily done and artificial respiration resorted to. The breathing was carried on with the utmost difficulty and for a period which seemed interminable the only sign of life was a more or less feeble pulse. Believing the foreign body to be in the trachea, I first introduced a short pair of forceps through the tracheal opening, but found nothing. A long pair of tracheal forceps was then carried down into the left bronchus, but to no purpose. The search into the right bronchus was more successful, for the forceps seized a lip of the open end of the tube and the toy was withdrawn.

A more careful examination and more deliberate planning would perhaps have resulted in a more prompt removal of the foreign body; but the patient's condition was so desperate that we all worked hastily, doing the thing which seemed urgently necessary at the moment. The tracheal wound was closed and beyond some

difficulty in breathing, for a few hours following operation, the patient's recovery was uneventful.

The subject of foreign bodies in the air passages has been recently and exhaustively presented by the members of this association. I believe it will be well, however, to reveal the possibility of direct examination of the bronchus, and thus of securing the advantage of observation of the foreign body in situ, facts which were presented in Dr. Coolidge's (1) paper, read at the Chicago meeting in 1899, and well illustrated in the case he reported. Then, too, there is a certain satisfaction in turning from the somewhat excited and hasty action involved in my case, to the deliberate and scientific methods there referred to. I will note briefly also from two such cases reported by Killian and H. von Schrötter, since they are illustrations of the possession of a rare and inspiring technique.

In Dr. Coolidge's case you will recall that a hard rubber tracheal tube had become detached from its shield and dropped into the right bronchus. The tracheal opening was enlarged downward; a urethroscope introduced and pushed downward to near the bifurcation. By the aid of reflected sunlight, the foreign body could be seen in the right bronchus, its upper end being about one-half inch below the bifurcation. It was removed by a long pair of alligator forceps passed through the urethroscope serving as a speculum.

In the case reported from Killian's clinic, (2) a piece of bone inspired while eating, lodged in the right bronchus. The foreign body was seen by means of Kirstein's instruments. It was found that the patient could tolerate a tube in the larynx, and through this by means of a long pair of tube forceps the bone was removed. It measured eight by fourteen by seventeen millimeters.

Schrötter (3) also has removed a foreign body from the right bronchus through the natural passages. The patient, a boy 12 years old, had inspired a lead seal. It was located by the X-ray as being at the right of the sternum and at the level of the fourth rib. Direct examination of the bronchus showed it to be in the second division of the right bronchus. A long pair of tube forceps with a Schrötter handle was passed into the bronchus under visual guidance, and the foreign body removed. The disc of lead was eight millimeters in diameter. All these patients made perfect recoveries.

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2. Killian, Abstract, Journal of Laryngology, Rhinology and Otology, December, 1897, page 705.
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DISCUSSION.

Dr. E. Mayer said that, in his opinion, the tracheotomy should be done under local anesthesia, for, if this plan were adopted, an anesthetic could be more safely administered through the open trachea, and the exploration for the foreign body could be carried on with less danger. In a case of his own, which had been briefly reported during the past year, a child had drawn in the nasal tip of an atomizer. The speaker said that when he had first seen the child the symptoms presented were not marked, and there was some doubt about the foreign body having been drawn into the respiratory tract at all. Two days later, however, dyspnea became urgent, and he then rapidly anesthetized the child with chloroform and did a tracheotomy, but the child ceased breathing and died. The foreign body was found and pushed forward from within the larynx. This unfortunate experience had taught him the importance of local anesthesia in this class of cases.

Dr. Price-Brown reported a case in which the anesthetic proved to be of direct benefit. The patient was a child of ten months, who was found to be crying and choking. Something had been removed from the throat, which was said to be a flat piece of wood about half an inch square. There were several recurring attacks of urgent dyspnea, and the physician in attendance was in doubt as to the true condition present, and hence the speaker was called in after twenty-four hours. Dr. Brown could find nothing at the time. Three or four hours afterward he was hastily summoned with the statement that the child was dying. The case at that time appeared to me purely one of dyspnea from obstruction in the larynx. A large roll was placed under the child's neck with the intention of performing a low tracheotomy. While the anesthetic was being administered the dyspnea and cyanosis passed away. He then performed tracheotomy, but could find no foreign body. A tube was inserted and the child breathed comparatively well. The next day it was stated that there had been one or two very slight and transient attacks of dyspnea. The tube was left in for four days, and during this time the temperature slowly rose to 101° F.

He allowed the tube to remain in for this length of time because of the smallness of the child and his desire to secure a larger opening. Examination after two days showed no respiratory murmur in the right lung, and the same condition prevailed up to the fourth day, indicating that a foreign body had become lodged in the right bronchus. On that day he took out the tube, and the child while coughing, expelled a long grain of corn. His idea was that the intense dyspnea at the time of operation was caused by lodgment of the foreign body immediately below the vocal cords, as the result of an attack of coughing—that the anesthetic relaxed the spasm—and that the elevated position of the neck enabled the grain to slip down to the bronchial tube before the trachea was opened. The reason the dyspnea was so slight while the tube was in position was, that the foreign body during coughing could not reach the cords. Although it had remained so long in the respiratory passages, there was no evidence of germination. The child made a good recovery.

Dr. H. L. Swain said that he had seen a case in consultation of a child of thirteen months, who had presumably swallowed a part of a peanut. There were all the symptoms of a foreign body in the trachea or lungs. The body seemed to change its position from hour to hour, as judged by symptoms, but was never definitely located. When first seen by him the child had a temperature of 104° F., and he thought it unwise to give an anesthetic, believing that it would almost surely result in pneumonia. The case continued about the same way for about five months, and then about half of the meat of a peanut was expelled, and, strange to say, it did not show any distinct softening. He was surprised that so large a foreign body could have remained without giving rise to definite signs of its presence and location.

Dr. D. Bryson Delavan said that Dr. Hopkins' case was one of the most extraordinary on record, as the foreign body appeared to be the largest that could be inhaled into an undeveloped larynx and trachea. Experience had taught him that in such cases anesthetics were dangerous, chloroform, administered with great caution, probably being the safest. The necessity for an anesthetic in such a case as Dr. Hopkins' was obvious.

Dr. A. Coolidge, Jr., said that when he reported his case at the meeting in Chicago he stated that the possibility of inspecting the trachea and bronchi by direct illumination seemed to him to have a most important bearing on the question of operation for inhaled

foreign bodies. It is much safer to make an attempt to remove such a body than to leave it there. A tracheotomy is not a very dangerous operation, and having been done, exploration of the bronchi is a simple and easy matter. In most cases the chance of finding the foreign body by direct illumination of the bronchi is very good. In the discussion of his paper one argument presented against immediate exploration for a foreign body was the report of a series of cases in which the foreign bodies had been coughed up some weeks after having been inhaled. On the other hand, a certain number of cases occur each year in which septic pneumonia or some other serious trouble develops in the lung after the inhalation of a foreign body, the latter having been allowed to remain. When it was necessary for the surgeon to fish around in the bronchi in the dark with long forceps the matter was entirely different, and a waiting policy was perhaps preferable. The tolerance of the bronchi to foreign bodies is often very marked. A year ago he had seen a man with a dime lodged in the respiratory passage. An unsuccessful attempt had been made a few hours before to extract it by tracheotomy and forceps. He found that the speculum could be passed and the foreign body extracted by direct illumination without any reflex disturbance, although no local anesthetic was used. In another recent case, a child had several days previously inhaled a hatpin, two inches long, with a rather small head. There was entire absence of respiratory symptoms, but following the lead of the X-ray, the bronchus was explored by direct illumination through a tracheotomy incision and the foreign body was quickly found and removed. Regarding the question of anesthetics, in view of the fact that the trachea and bronchi are so tolerant, it may not be necessary to use anything but a little cocaine for the performance of the tracheotomy. Dr. Meyer suggests that the trachea should be first opened and then a general anesthetic given; but in many cases, especially self-possessed adults, no general anesthetic is needed for exploration of the bronchi. The extraction of foreign bodies, through the natural passage is a refinement which is certainly worthy of consideration from a cosmetic standpoint, but the danger of such a procedure except in the most expert hands would be fully as great as through a tracheal opening, and the difficulties very often much greater. It would be useless to attempt it unless there were at hand a full supply of specially adapted instruments.

Dr. W. K. Simpson said that the discussion had already brought

out very distinctly the important elements of success in these cases. The chief points were the promptness with which the patient was seen and the condition of the patient. It was, of course, important to know the size of the foreign body and its exact location. If the foreign body were small and making excursions in the trachea, the use of the O'Dwyer cylindrical foreign body tube was an excellent means to secure the coughing out of the intruder. These tubes have no swell upon them, and when inserted into the larynx extend well down to the trachea. The procedure was one well worth bearing in mind.

Dr. Hopkins closed the discussion. He said that the objections against the use of general anesthesia were strong ones, and ought always to be borne in mind. The reason for its employment in this case was that the patient was an untrained, excitable shop girl, and would probably have proven unmanageable under local anesthesia. Regarding the passage of so large an object through the larynx, a probable explanation is the position in which the toy lay in the mouth. It was held with the rubber end toward the throat. This broad enlargement acted as an open umbrella in the strong draft of suddenly inspired air and helped to draw the toy downward into the bronchus.

CARCINOMA OF THE EPIPHARYNX.*

BY HANAU W. LOEB, A.M., M.D., ST. LOUIS.

In studying carcinoma of the epipharynx, I exclude all cases which originate from the nose, tongue, tonsils or lower pharynx, assuming that in such instances the disease in the epipharynx is simply an extension or a metastasis. All the cases collated cannot be considered strictly as primary, yet the original seat of the process is so obscured in such cases that it cannot be definitely determined either by the symptomatic progress or by postmortem. In this way we distinguish between carcinomata already recognized, which extend to the epipharynx, and those which appear in the epipharynx without any previous clinical evidence of their existence.

A glance at the literature of epipharyngeal carcinoma demonstrates how uncommon it is, whether we view it from the standpoint of a primary or a secondary process. Many monographs, text-books and papers which treat of conditions which should include carcinoma of the epipharynx, refrain from any mention of its existence, pass it by with a word or describe its occurrence superficially, at the same time admitting that the author has never seen a case.

Krönlein (1) in 900 cases of cancer, observed cancer of the pharynx 61 times, and of these only 2 were of the epipharynx.

Joel (2) writing upon neoplasms of the nasal cavities and epipharynx, dismisses this part of the subject by stating that sarcoma and carcinoma of the epipharynx are fortunately uncommon and that, by extension to the brain or metastasis, they rapidly result in death.

Schech (3) reports that he has seen 17 cases of malignant disease of the pharynx, of which 4 involved the epipharynx, all being sarcomata.

Mikulicz (4) states that carcinoma and sarcoma of the epipharynx are exceedingly uncommon, and that Gerard Marchant does not even mention them in his treatise. Out of 40 references given by

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this author upon cancer of the epipharynx, only four or five bear upon carcinoma. The same writer gives 170 references to malignant diseases of the meso- and hypopharynx.

W. Watson Cheyne (5) in the Lettsomian lectures on the Objects and Limitations of Operations for Cancer, reports, in extenso, three cases of sarcoma of the epipharynx, but not a single case of carcinoma.

Politzer (6) has seen five cases of epithelioma of the Eustachian tube, but in every case the disease spread from the tongue and superior maxilla.

Morris Schmidt (7) states that he has never seen a case of primary carcinoma of the epipharynx. To show the infrequency of epipharyngeal carcinoma, compare the foregoing with the number of malignant growths of other portions of the respiratory tract, observed by this author. In the ten years ending in 1894, he saw 6 sarcomata, 5 carcinomata and 2 lympho-sarcomata of the nose, 1 angiosarcoma and 1 sarcoma of the epipharynx, 2 sarcomata and 16 carcinomata of the mesopharynx; 3 sarcomata and 75 carcinomata of the larynx, and 2 carcinomata of the trachea.

Bosworth (8) collects five cases from the literature previous to the publication of his book. Close investigation shows that at least three do not properly come under our category, as there was extensive involvement of the other regions of the pharynx, larynx, superior maxilla and neck, and there is more or less doubt as to diagnosis. However, as most writers quote these cases upon Bosworth's authority, they are included in the tabulation of cases.

Bosworth himself only saw one case up to the time when his work appeared.

Martin Mulfarth (9) mentions only seven cases, the six cited by Bosworth and an additional one reported by Fox.

Schreiber (10) makes only a single reference, the case of Fox.

Jackson (11) collects fourteen cases which he terms primary carcinoma of the nasopharynx, however, while they come under the classification which I have made, they cannot all be considered primary. For instance, the five cases which Bosworth found in the previous literature of the subject are included in his table.

Gibb (12) includes only nine under this designation, leaving the six cases of Bosworth entirely out of consideration and adding the case of Kuh.

It is therefore quite manifest that carcinomata of the epipharynx

are to be classed among the rarest of affections and while the disease far more frequently attacks near-by structures and organs, such as the superior maxilla, tonsils, middle ear, nose, mesopharynx, tongue and larynx, extension to the epipharynx is exceedingly uncommon.

The case which I now report is the only one which I have observed in my whole practice and deserves some place in the literature of the subject, in that it was far more rapid in its course than any whose description is at my command, and in that the progress of the growth could be well mapped out by the symptoms as they appeared one by one.

Mrs. D. C. H., aet. 40, consulted me on October 29, 1901, at the instance of Dr. Bransford Lewis. Her symptoms had been present for six weeks, and although they had developed rather suddenly, they had become gradually worse. She attributed the condition present to a cold which she said she had taken at that time. These symptoms were sudden deafness, tinnitus, nasal obstruction on the right side, bloody fetid discharge from the right naris and from the epipharynx. These symptoms had all increased until, when she consulted me, they had become very annoying. In addition she suffered from time to time from slight pain in the region of the right side of the throat, running towards the ear, teeth and occiput. There was some obtundity of olfaction, but no interference with the sense of taste.

Previous history was entirely negative as she had never been sick but once, two years ago, when she had a mild attack of grip. She had never been subject to headaches or acute attacks of coryza.

Family history showed nothing of interest.

Examination. There was slight but easily discernable paresis of the right facial, involving the branches distributed to the muscles of the mouth. The right orbicularis palpebrarum and the right eye muscles were apparently unaffected. Tongue was unaffected but the right side of the palate was but slightly movable. Left nostril was unobstructed and normal. Right nostril contained bloody discharge which came from the posterior portion of the nasal fossa, otherwise presenting nothing of interest. Examination of the epipharynx was easy and showed the left side entirely free from anything abnormal. On the right side was found a growth involving and including the Eustachian tube and extending along the lateral wall of the pharynx to the posterior wall and roof, but not the latero-anterior wall and posterior naris.

The mass was surrounded by an inflammatory area which, however, did not extend beyond the median line. Mesopharynx, hypopharynx, larynx, bronchi, heart and lungs showed no signs of disease. The closest examination could reveal no evidence of syphilis, recent or old.

Examination of left ear, negative. Right ear, membrane tympani greatly retracted, some injection of the vessels of the hammer. Whisper heard one-third of a meter from the ear.

There were four possibilities which were to be considered by way of differential diagnosis, viz., syphilis, tuberculosis, benign and malignant neoplasms, a view concurred in by Dr. Goldstein who saw the case in consultation.

To differentiate these conditions, a portion of the growth was removed and subjected to microscopic examination, while the patient was immediately put upon the iodide of sodium, although there was absolutely no history or suspicion of syphilis. The iodides were well borne, and the dose was consequently speedily increased to 55 grains three times a day, without, however, causing the slightest improvement. In fact, the patient grew worse day by day. The unilateral nasal obstruction which had been partial became complete, the deafness and tinnitus increased, the facial and palatal paralysis became more marked, the tumor increased in size and showed evidence of ulceration over the posterior surface of the tube and above all the pain increased to such an extent that it became almost unendurable. Within a few weeks after I saw her, two enlarged posterior cervical lymphnodes appeared on the right side.

She began to lose flesh and strength quite rapidly.

On December 5th she took to her bed and, from that time on, the symptoms rapidly increased in severity, the pain requiring frequent administration of morphine. December 14th, complete paralysis of the left upper and lower extremities appeared, intense right-sided sialorrhea, mild delirium and coma; exitus lethalis, December 21st, less than fifteen weeks after the first symptom manifested itself and less than two months after she consulted a physician.

Dr. B. Meade Bolton makes the following report of the microscopic findings in the specimen removed:

A small friable mass, about the size of a pea, dark red color. Although the bit of tissue was so small, it proved sufficient for diag-

nosis, since it showed in mounted sections the characteristic structure of a carcinoma.

As was to be expected from the soft consistence, the connective tissue stroma was not abundant. The walls of the alveoli were for the most part thin. The alveoli in most of the sections were the ordinary oval or polygonal spaces filled with large epithelial cells. In some of the sections, cross sections of the glands were found filled with cells of the same type. It is possible that the tumor arose from the glands, though the adenomatous character was hardly pronounced enough to constitute an adenocarcinoma. Some of the sections showed more evidence of fresh inflammation than others, though this was not lacking in any of them; some of them in fact showed little else than round-cell infiltration.

EXPLANATION OF THE SYMPTOMS.

Pain. The close relation of the tumor to the otic ganglion, the closure of the Eustachian tube and its involvement in the tumor mass, the possible involvement of the Gasserian ganglion and the eventual intrusion into the cranial cavity account for the pain both as to its inception and later progress.

Paralysis of the facial. Just how the facial became involved is a very interesting question. Whether the mass grew towards the parotid where the facial lies or along the Eustachian tube and the petrous portion of the temporal bone towards the stylo-mastoid foramen, it is impossible to say in the absence of an autopsy. In all probability the earlier manifestations were due to pressure more towards the distal portion of the nerve, while later the growth approached the nerve more centrally and thus influenced a larger number of fibres, thereby accounting for the later appearance of paralysis of the orbicularis palpebrarum.

Paralysis of the palate was very likely due to the pressure on or involvement of the right vidian which conveys many of the fibres which are distributed to the levator palati; however, the tumor itself may have included the palatal muscles and in this way caused loss of motion.

Hemiplegia. The occurrence of this symptom, a week before death, is the evidence of pressure on the motor centers of the right cerebrum induced by an inflammatory exudate, abscess, by the growth itself, or possibly by a meningitis.

Tinnitus and deafness. The explanation is evident.

Nasal obstruction. Manifestly this was due to the presence of

the growth in the epipharynx and not to any growth or swelling in the nose itself. The examination clearly showed that the growth did not originate in the naris, a point of considerable importance in identifying its habitat.

Siallorrhea. Probably due to late involvement of the chorda tympani nerve.

LOCATION AND EXTENSION OF GROWTH.

From the symptoms as thus explained, it is quite possible to map out the location of the growth and the direction it took in its progress.

As has been stated, the growth included, within it, the orifice of the Eustachian tube. It doubtless grew upwards towards the foramen lacerum medium, where it came into relation with the vidian and where it probably entered the cranial cavity and involved the Gasserian ganglion or its branches. The severe pain which was so well localized throughout the distribution of the fifth nerve could hardly be ascribed to any other cause. If the muscular branch of this nerve was affected, it must have been late in the disease.

The tumor then, I assume, grew from its original seat through the foramen lacerum medium into the cranial cavity, and along the Eustachian tube and inferior border of the petrous portion of the temporal bone, where it could come into relation with the facial and its branches the chorda tympani and large superficial petrosal, which according to the clinical evidence were affected. That there were not symptoms of paralysis of other cranial nerves, is easily explained by the early death of the patient, before extension to their points of exit occurred.

REVIEW OF THE LITERATURE.

A review of the reported cases is instructive, as to the progress of the affection, the appearance of the symptoms and the extension to adjacent structures. The cases, twenty-nine in number, are presented in the chronologic order of their report.

Case I. Durand Fardel (13) reports a case associated with tumors of the neck and face and involving the pharynx and epiglottis and originating from the soft palate. The tumor according to the reporter proved to be a scirrhus. The patient, a man, aet. 75, died from exhaustion.

Case II. Maisonneuve (14). Several operations were performed in this case, a man, aet. 50, one of which was extirpation of the

superior maxilla. The carcinoma in the epipharynx was very likely secondary. The tumor was found attached to the base of the occipital bone and to the body of the sphenoid.

Case III. Lotzbeck (15) details an interesting case of carcinoma of the basis cranii with metastasis in the thyroid and inferior maxilla. The patient, a woman, aet. 37, suffered from severe headache, amblyopia and eventually amaurosis of the right eye. The growth involved the lesser wing of the sphenoid as far as the edge of the petrous portion of the temporal bone had occupied the space between the crista galli, the foramen magnum, foramen ovale and foramen rotundum on the left. Below, the growth extended between the mastoid and pterygoid processes and the condyle of the occipital on the right side, reaching to the left as far as the foramen lacerum medium and the foramen ovale. The sphenoid and the basillar portion of the occipital were entirely destroyed. The writer does not mention that a histologic examination of the tumor was made.

Case IV. Flour (16). A woman, aet. 30, had noticed for some years a small tumor on the right side of the neck which had rapidly increased in size, although for several years previously it had been quiescent. A tumor which sprang from the base of the skull obstructed the right posterior nae. From the pressure of the neck tumor upon the vagus, paralysis of the right side of the larynx resulted, and contraction of the pupil from a similar involvement of the sympathetic. No microscopic examination was made.

Case V. Assaky (17) reports a case which occurred in the practice of Polaillon, one in which there was a tumefaction involving the temporal, mastoid and masseteric regions. This was increased and a great quantity of pus withdrawn. The patient had paralysis of the right facial with deviation of the tongue and palate and of the orbicularis palpebrarum, pain on mastication, obtundity of taste, labored respiration. Saliva was amphichromatic. Author maintained that there was complete paralysis of the facial and of the spinal accessory and partial paralysis of the glosso-pharyngeal, pneumogastric and hypoglossal. Pain was incessant over the whole head. On autopsy the atlas was found completely destroyed and the foramen lacerum posterius was invaded, explaining the paralysis of the spinal accessory, pneumogastric and glosso-pharyngeal. Microscopic diagnosis, carcinoma probably originating from the middle ear.

Case VI. Schmidt (18). In the patient, a man, aet. 65, a small

cell medullary carcinoma was found occupying the whole vault of the pharynx. The tumor which was richly supplied with cells was the subject of several superficial ulcerations. The mass was removed by Gussenbauer's operation, the base of the growth being curetted, and treated with the thermo-cautery. A recurrence took place in one month, appearing in the left choana, perforating the cicatrix in the hard palate on both sides of the maxillary sinus. For this, the surgeon resected the greater portion of both superior maxillas as far as the orbital plate. Recurrence took place in two weeks and the patient died one week later.

Case VII. G. Seppilli (19) reports a case of cancer of the pharynx extending to the left fossa media of the cranium, causing atrophy of the cells of the left superior cervical ganglion of the sympathetic.

The patient was a woman 58 years of age, who five years previously observed a tumor in the region of the left maxillary. The patient became morbid, often spoke of committing suicide, and was therefore placed in an insane asylum. The essential symptoms of the disease consisted in contraction of the left pupil and of the left palpebral fissure, paralysis of the left abducens, decrease of the sensibility to warmth, pain of the skin of the entire left side of the face and head, decrease in hearing of the left ear, and mild decrease of the cardiac excitability of muscle and paresis of the lower branches of the left facial muscle supply; finally loss of taste of the entire left half of the tongue, atrophy and decrease of the electro-muscular excitability, and double anosmia, which was, however, more pronounced on the left side. Besides these symptoms, a resisting tumor the size of an apple was found in the upper cervical triangle, that appeared to press upon the vertebral column, and within corresponding to a light bloody tumor on the posterior and outer side of the left half of the pharyngeal cavity. While the patient was in the asylum a high degree of cachexia developed, and after numerous attacks of neuralgia in the paralyzed half of the head, she finally succumbed to severe hemorrhage of the pharyngeal tumor. She was in the asylum about three months.

Seppilli states that the contraction of the pupil and the palpebral fissure was due to the disease of the superior cervical ganglion of the sympathetic; the painful anesthesia and the loss of taste in the anterior two-thirds of the left half of the tongue to the disease of the extra-cerebral branches of the fifth cranial nerve, and of the Gasserian ganglion: the paralysis of the muscles of the eye to the

intracranial disease of the abducens; the hemiatrophy and the loss of taste in the posterior third of the tongue to the intracranial disease of the hypoglossal and glossopharyngeal. The loss of hearing and the anosmia were traced back to the compression of the Eustachian tube and to the occlusion of the posterior nares on account of the new growth.

Furthermore, the cachexia, the swelling of the neighboring lymphatic glands, the rapid course and the hemorrhage made a carcinomatous disease probable and therefore warranted the diagnosis of a primary cancer of the left side of the pharyngeal mucous membrane, extending to the middle cranial fossa and to the nerves and lymphatic glands of the left side of the throat. The autopsy entirely confirmed this supposition. It is perhaps worthy of mention that the facial was wholly intact and the symptoms that led to the suspicion of paresis of the same, are believed by the author to have been caused by atrophy of the muscles, which resulted on account of disease of the sympathetic and the trophic fibres of the cervical ganglion.

Case VIII. Bosworth (8) reports a single case from his own practice of medullary carcinoma attached to the base of the skull. For two years the patient, a woman, aet. 59, had had nasal stenosis attended with an unpleasant discharge of a muco-purulent character and sometimes containing blood clots. Eight months before a large mass of swollen lymphnodes appeared on the neck, somewhat nodular and irregular, but not painful. Rhinoscopic examination revealed an irregularly-rounded grumous-looking mass in the pharyngeal vault hanging down over and occluding the posterior nares. A mass of the size of a walnut was removed with a snare giving entire relief from the stenosis. After further removal of small masses, the enlargement of the lymphnodes decreased, but increased later again, after which superficial ulceration appeared. The patient became cachectic and brain symptoms such as somnolence, occasional lapses of semi-consciousness and stupor manifested themselves, death supervening from exhaustion.

Case IX. Sidney Allan Fox (20) reports the case of a man, 40 years old, who was thin, nervous and cachectic, unable to sleep at night on account of inability to breathe through his nose, and on account of mucus dropping into his throat. The hearing was much impaired, and he complained of rumbling noises in the ears. He was diplopic at times. The odor from the naso-pharynx was some-

times fetid. Examination showed a cauliflower growth in the epipharynx. The lateral walls of the pharynx as well as the posterior walls, the choanae and spaces about the Eustachian orifices were matted within the growth. Annandale's operation was performed, but the patient succumbed two months later, after having become steadily weaker and suffering from paralysis of the left hand and swelling of the right side of the face. Autopsy showed at the base of the skull in the middle fossa a loss of substance involving the body and a portion of greater wing of the sphenoid bone and eroding the inner end of the petrous portion of the temporal, making an irregular opening about three inches in diameter. The space was distended with the broken down tumor mass and clots, and led directly into the epipharynx. The growth which was found to be of epitheliomatous character, involved the pharynx and the left orbit.

Case X. Robertson (21) reports a case under the care of P. McBride; a woman, aet. 56, complained a year before of pain in the left ear and loss of the sense of smell in the left nostril. This was gradually followed by deafness and difficulty of breathing through the left nostril, gradually increasing until there was complete obstruction. Pain extended to the eye and lower jaw, interfering with swallowing. Discharge of pus existed two months after appearance of pain in the ear. No statement is made of the further progress of the case.

Case XI. Roncalli (22) reports the case of a man, aet. 42, who suffered from otalgia, bloody discharge and hemorrhage from the throat due to telangiectasic carcinoma. Death resulted from marasmus and hemorrhage. Roncalli considered this an instance of metamorphosis of a benign into a malignant tumor.

Case XII. Lyonnet and Regaud (23) report a very interesting case of carcinoma of the posterior nares involving the sphenoid and eventuating in meningitis and death. Symptoms began eight months before death, with pains on the left side of head. Two months later the vision of the left eye became affected, then the left upper eye-lid began to droop and the tongue and mouth became paralyzed. Examination showed the left levator and orbicularis palpebrarum completely paralyzed and also the external and internal recti. There was no movement of the pupil or eye ball. Exophthalmos very pronounced. There was paralysis of the left side of the face; the tongue was deviated to the left with atrophy of the left side; general sensibility diminished on the left trigeminal side;

conjunctiva insensible; taste absent from left side of tongue; considerable interference with speech.

Autopsy showed purulent infiltration of the meninges at the base of the brain and in the region of the cerebellum. Central part of the sphenoid softened and sella turcica in part destroyed. In the posterior nares a small, hard tumor was found attached to the bone and invading the sphenoid. The writers think that the invasion took place through the foramen lacerum anterius.

Case XIII. Lacoarret (24) reports a case of malignant disease of the epipharynx in a man aet. 65, who complained of no symptoms except slight deafness and tinnitus. The disease was discovered through catheterization.

Case XIV. Cecil Beadles (25) reports a case of glandular carcinoma of the epipharynx in which there was a large ulcerating growth in the temporal region, a secondary beneath the brain. The pituitary body was intimately connected with the growth.

Case XV. Benda (26) exhibited to the Berliner Medicinische Gesellschaft a specimen which proved to be squamous-cell carcinoma growing from the vault of the pharynx. Almost two years before the patient, a woman, aet. 20, first noticed swelling of the lymphnodes. A year later she presented herself to the hospital for treatment of the enlarged lymphnodes, at the same time complaining of pain in the region of the right ear. Drum membrane was reddened, but no pus was found on paracentesis. Later the pain in the ear increased and appeared in the cervical vertebrae, while the tube was obstructed. Movement of the head was interfered with to such an extent that the patient held her head whenever she sat up. These symptoms were followed by swelling in the right tonsil and palate with pus discharge from the ear, metastasis in the lung and death.

On autopsy the growth was found in the epipharynx attached to the mucous membrane and to the sphenoid, pressing backwards into the longus capitis and the body of the second cervical vertebra. The left cervical nodes were greatly enlarged, the right being absent as they had been removed without being followed by recurrence. The right Eustachian tube was completely imbedded in the tumor, likewise the third branch of the fifth. The growth entered the skull with this branch through the foramen ovale. The right Gasserian ganglion and cavernous sinus were involved in the growth.

Cases XVI and XVII. Meyjes (27) reports two cases of car-

cinoma of the pharynx in both of which there was a decided disproportion between the symptoms and the gravity of the disease. The first patient, *act.* 54, had nasal obstruction and epistaxis for six months with swelling in the throat for six weeks. A growth was discovered in the epipharynx of the size of a grape, pressing the palate downwards. The growth was removed by Gottstein's curette. The second patient, *act.* 51, had suffered from nasal obstruction and pains in the neck and later from enlarged lymphnodes, fetid nasal and aural discharge. The whole right side of the nose was filled up with vascular growths and the soft palate was displaced by the growth from the wall of the pharynx, most likely originating from the sphenoid. Microscopic examination showed both growths to be carcinoma. According to a letter received from Meyjes, I learn that both patients died from exhaustion shortly after the report was made.

Case XVIII. Krönlein (1) reports the case of a woman aged 54, who suffered from nasal obstruction and headache. A carcinoma was found springing from the posterior wall, covering both choanae. Symptoms became more severe as the growth increased in size; intense dysphagia appeared and death occurred nine months after. Krönlein saw the case, which from the first he considered inoperable.

Case XIX. Krönlein (1) also reports in extenso the case of a man, a bookbinder, aged 54, who had suffered from headache, pain and deafness in the left ear for six months, also at times from hemorrhage from the nose and pharynx. Krönlein removed a portion of the growth which was found involving the vault of the pharynx and the left choana. Microscopic examination showed it to be cancrroid (squamous epithelioma.) A temporary resection of the left nasal bone and nasal process of the superior maxillary was made after the method of Langenbeck and the carcinoma removed by Gottstein's curettes. Recurrence took place soon after and death one year after first appearance of the symptoms.

Case XX. Edwin J. Kuh (28). Patient 37 years old, was found to have a post-nasal growth which was removed. A week after the operation there was some return of the growth, and within a month the post-nasal space was almost completely filled with the mass. A section of the tumor showed it to be an epithelial cancer, the nests of concentrically arranged cells being embedded in lymphoid tissue. The erysipelas-prodigiosus toxins were used but without avail.

After this, injections of alcohol were undertaken and in five months all trace of the tumor had disappeared. The patient, however, died in August, 1899, of metastases in the lymph nodes without local recurrence. (Personal letter from Dr. Kuh.)

Case XXI. Delageniere (29). A woman, aet. 29, with symptoms of nasal obstruction, was relieved by removing the growth. A tumor as large as a hen's egg was removed from the basillar process after splitting the palate. Patient completely recovered. Histologic examination showed the case to be one of glandular epithelioma.

Case XXII. E. J. Brown (30) reports a case of a man, aet. 40, in whose epipharynx were found two growths attached to the vault, not unlike adenoids. These were removed with a cold snare. Three and a half years later he returned, complaining of deafness, tinnitus and loss of weight. New growths were found occupying the epipharynx, extending to the Eustachian tubes, and the cervical lymph-nodes were enlarged on both sides. Six months later the patient again consulted him, when it was found that the lymphnodes in the neck had increased considerably, and likewise obstruction to nasal respiration. Enough of the growth was removed to afford breathing space. Death occurred five years after the first consultation. Microscopic diagnosis, epithelioma.

Case XXIII. St. Mary's Hospital (31). At the Sixth International Medical Congress, the following specimen was exhibited:

Left half of a skull with pharynx, tongue, etc. Left side of soft palate and pharynx is destroyed and replaced by a deeply excavated ulcer, with raised irregular margins, which extends to the base of the skull. From the seat of ulceration growth had extended to the middle fossa and left sphenoidal fissure, and to the left inferior turbinated bone and antrum of Highmore. A mass of enlarged glands is cut through on the left side of the neck.

From a man, aet. 45, who had had syphilis, admitted for fainting fits and facial paralysis. He noticed occlusion of the left nostril six months previous to admission. A month later there was hemorrhage from the right nostril, and persistent headache on the left side. After two months there was difficulty in opening the mouth and swelling in the left side of the neck. Three weeks before admission the right side of the neck began to swell, there was difficulty in protruding the tongue, and fainting fits. On admission, he had pains in the neck, difficulty in speaking, and giddiness; lower

jaw retracted and pulled to the left; wasting of left temporal and masseter muscles. wasting of the left side of tongue, which was pulled to the left; left internal strabismus and anesthesia of left cornea; anesthesia of left side of face generally; swelling on each side of the tongue.

Case XXIV. Hirschl (32) demonstrated a preparation of carcinoma cylindromatosum which extended from the mucous glands of the pharynx into the anterior middle and posterior cranial fossae.

Case XXV. Hellat (33) reports a case of carcinoma of the posterior wall of the pharynx. A portion was removed by an adenomate followed by improvement for two months; after this, the patient was taken with severe headache, paralysis of left hypoglossal and recurrent and tachycardia (pulse 134). This was followed by intense pain on the right side, complete atrophy of the tongue, paralysis of the right recurrent and right abducens, impossibility to speak, cough and swallow, complete laryngeal paralysis and death from heart paralysis.

Case XXVI. Elder (34). A boy, aet. 14, suffered from severe pain apparently at the base of the brain, fetid, purulent discharge and enlargement of the cervical lymphnodes. Death occurred two years after the first symptoms appeared. Diagnosis, schirrhus.

Case XXVII. McBride (35) reports the case of a woman, aet. 63, who suffered from severe pain in the ear and throat, bloody expectoration, involvement of cervical lymphnodes. Death occurred one year after symptoms developed. Diagnosis, epithelioma.

Case XXVIII. Chevalier Jackson (11) reports the case of a white woman, aet. 23. For three months she had had constant, lancinating pain in the right cheek, above right eye, deep in right ear, and in and under right side of lower jaw. She had had intermittent pain for over a year. Right nasal stenosis was first noticed three weeks before consultation. Discharge anteriorly and posteriorly odorless, thick and yellow; no history of hemorrhage. Cervical, parotid and submaxillary lymphnodes enlarged and tender. Right cheek swollen; patient cachectic; temperature subnormal. Functions of 5th and 7th nerves unimpaired and brain uninvolved. Low grade of optic neuritis in both eyes

The tumor was a cauliflower-like mass, completely hiding the right choana and fossa of Rosenmuller. It seemed to have sprung from the right wall of the epipharynx, both anterior and posterior to the Eustachian eminence. Large masses of adenoid tissue hung from the vault, with a red-bordered ulceration at the extremities

of some of the masses. Posterior and middle turbinates infiltrated. Portion of growth examined by Dr. E. Mayer showed nothing to indicate malignancy. The greater portion of the growth, a mass as large as a hen's egg, was then removed by snare and curette. Dr. E. Mayer again examined sections microscopically and reported it to be a columnar epithelioma. Dr. L. H. Prince pronounced it glandular-celled carcinoma. Three months after operation, there is a deeply-excavated ulcer at the junction of the vault with the outer wall. Discharge, muco-purulent; no hemorrhage; no fetor. Parotid gland on right side infiltrated, tender, and the seat of darting pains. Mastication and swallowing easy and painless.

The following, written to me by Dr. Jackson, shows the present status of the case, April 9th, 1902:

In reply to your inquiry concerning the case of carcinoma of the nasopharynx, I am able to give you data obtained at an examination on March 22nd, 1902, a little over two weeks ago, about one year after removal and in the beginning of the third year of the disease.

The patient though weak, emaciated, cachectic, aged and stoop-shouldered, was able to come to my office in a carriage for examination. The pain is of two kinds, lancinating in the seat of the growth and reflected along in the fifth nerve, the former predominating. She reports taking $1\frac{1}{2}$ grains of morphine hypodermically three times daily. Glandular infiltration has not increased any since operation a year ago. Extension forward has involved the antrum, and a spot about the size of a dime has appeared in the roof of the mouth, though I am uncertain as to whether this is cancerous or the slough from the cauterization by a quack. She reports noticing nothing at this location prior to the "burning" by the wretch into whose hands she fell. There is but slight discharge, which is muco-purulent, never sanguinolent, though there have been two or three slight hemorrhages at long intervals.

The following is the report upon the case by Dr. Mayer, the neurologist:

No central involvement. Olfactory nerve, involved in terminal filaments in nose (?). Optic nerve, not normal, but not involved. Motor oculi, normal. Trochlear, normal. Trifacial: ophthalmic normal; superior maxillary, posterior dental branches involved; palatine branches affected; inferior maxillary, lingual involved at periphery. Sixth abducens normal. Facial slightly involved (?) Lin-

gual fibres pass up along the chorda tympani to facial nerve and run in it to the geniculate ganglion, thence along vidian nerve to sphenopalatine ganglion, and so along second division of fifth. This would show the seat of involvement. Destruction of chorda tympani would affect taste, sensation and hearing as we find it in this case. Seventh to twelfth cranial nerves all normal. Pupils react normally to light and accommodation and are equal. Motility of the eye perfect, including third, fourth and sixth nerve fibres. Visual field normal, but acuity diminished. Apparently low-grade optic neuritis.

Sense of smell absent on right side. [Possibly due, at least partially, to right nasal stenosis.—Jackson.]

Right anterior part of tongue has almost lost sense of taste to sweet, sour and bitter. Lessened tactile sensibility and temperature sense on this part of the tongue. No incoördination.

Case XXIX. Loeb. My own case reported in this article.

ANALYSIS OF CASES REPORTED.

If we analyze these cases, a number of interesting points will be noted.

Age. One patient was below 20, 3 patients between 20 and 30 years of age, 4 between 30 and 40, 5 between 40 and 50, 8 between 50 and 60, 2 between 60 and 70, and 1 over 70 and in 5 the age was not stated.

It is somewhat surprising that four of these should have been below 30 years of age. In Benda's case a woman, act. 20, the diagnosis was squamous-cell carcinoma—certainly one that must be accepted as authoritative, coming from so well known a pathologist. Delageniere's case, 29 years of age, is much more doubtful, since recovery took place following removal of what was called glandular epithelioma of the base of the skull. Elder's case, act. 14, diagnosed schirrhous, is very young for this form of carcinoma, and Jackson's case is still undetermined as to final result.

Sex. Thirteen of the cases were men, eleven women, with the sex not stated in five, showing that both sexes are about equally affected.

Diagnosis. As might be expected the diagnosis shows considerable variety as to kind of carcinoma present, both from the histologic nature of the growths and from the macroscopic appearances, which in the earlier times determined the name of the cancer. There were two squamous-cell carcinomata, one glandular carcino-

ma, two glandular epithelioma, one carcinoma cylindromatosum, six epitheliomata, two schirrhous, one small-cell carcinoma, one medullary carcinoma, one telangiectasic carcinoma, eleven designated simply carcinoma, and one in which the diagnosis was not stated. The latter, the case of Lacoarret, is included as belonging to the category of carcinoma on account of the age of the patient, 65 years.

According to the modern histologic point of view, it therefore appears that there have been two squamous-cell carcinomata, two schirrhous, one medullary carcinoma, four adenocarcinomata, one telangiectasic carcinoma, seventeen carcinomata, without predominance of any particular elements.

Pain. This symptom which was so prominent a feature of the case reported by me, was especially marked in the cases of Assaky, Seppilli, Robertson, Lyonnet and Regaud, Benda, Krönlein, Elder, Jackson and Hellat. In three of the cases where autopsies were performed, the lesions were close enough to the Gasserian ganglion to account for the intense and widely distributed pain. That pain should be a common symptom will be readily accepted in view of the rich distribution of sensory fibres in the pathway, externally, posteriorly and anteriorly, which the tumor selects or makes for itself in its growth.

Ear Symptoms. The Eustachian tube which projects latterly into the epipharynx invites attack. Thus we observe that in the majority of cases, tinnitus, deafness and retraction of the drum were present. Deafness and tinnitus were the sole symptoms in Lacoarret's case.

Nasal Obstruction. Practically present in all cases as the growth itself, with its accompaniments of inflammation, ulceration and discharge, is sufficient to close more or less completely one or both posterior nares.

Discharge from the Nose and Epipharynx. Likewise a common symptom. It was particularly noted as being fetid in the cases of Bosworth, Meyjes, Fox and my own, and in most of the cases where the symptoms are fully described, a bloody discharge or epistaxis is cited.

Paralysis of the Cranial Nerves. The relation of the epipharynx to the base of the skull which affords exit to the cranial nerves naturally calls for their involvement in a process which spreads so rapidly and extensively as carcinoma. Thus we find paralysis of the optic in the cases of Lotzbeck and Lyonnet and Regaud; motor

oculi and trochlear reported by Lyonnet and Regaud, and the St. Mary's Hospital case; of the motor branch of the fifth by Benda and Lyonnet and Regaud, of the abducens by Hellat and Lyonnet and Regaud; of the facial by Assaky, Seppilli, Lyonnet and Regaud and Jackson, as well as by the writer; of the glosso-pharyngeal by Assaky and Seppilli; of the vagus by Flour, Assaky and Hellat; of the hypoglossal by Hellat and Seppilli and of the spinal accessory by Assaky.

Involvement of the Cervical Sympathetic. Contraction of the pupil resulting from this is reported by Flour and Seppilli.

Paralysis of the Extremities. From extension to or pressure upon the brain, hemiplegia may result as shown in my own case where one week before death this symptom appeared. In the case of Fox, there was paralysis of the hand.

Atrophy of the Tongue. The cases of Seppilli and Lyonnet and Regaud and St. Mary's Hospital, showed marked hemiatrophy of the tongue.

Extension to the Brain. A few of the cases have been followed and the course of the tumor in its extension through the basis cranii has been determined. In Assaky's case, the extension occurred through the foramen lacerum posterius; in Seppilli's the middle fossa was invaded; in Fox's the inner side of the floor of the middle fossa was entirely destroyed; similarly Lotzbeck's case involved almost the entire floor of the middle fossa; in Lyonnet and Regaud's the foramen lacerum anterius seemed to be the channel through which the growth entered, likewise the St. Mary's Hospital case; in Benda's through the foramen ovale; in Hirschl's case the extension was to all three fossae; in Beadles' case the petuitary body was involved, and in my own case, invasion was probably through the foramen lacerum medius.

Cause of Death. The cause of death in these cases was exhaustion, inanition, paralysis of the heart, hemorrhage and brain involvement.

In one instance, that of Delageniere, a cure is reported, but from the account of the case which I have at hand, I am not inclined to accept this as one of carcinoma, the recovery and the youth of the patient being somewhat incompatible with our experience. Jackson's case, though still alive, will from indications soon be added to the list of deaths.

Operations. The following operations have been performed:

Gussenbauer's, Langenbeck's, removal with a snare, Amundale's operation, removal with Gottstein's curette, injection of erysipelas-prodigiosus toxins, and injections of alcohol, all to no avail, except in the instances just noted.

CONCLUSIONS.

From the foregoing it appears that, although carcinoma of the epipharynx must be accounted as one of the rarest of affections, its symptoms declare themselves with such positiveness that a diagnosis may be made at an early stage.

The early symptoms are pain, deafness, tinnitus, nasal obstruction, fetid and bloody discharge on the affected side, unilateral paralysis of the palate and of some of the muscles supplied by the facial.

Later symptoms depend upon extension to and through the basis cranii most commonly in the region of the foramen lacerum medium, where it comes into relation with the Gasserian ganglion. The extension may be more anterior involving the pterygoid process or the greater wing of the sphenoid and eventually reaching the foramen lacerum anterius, producing thereby disturbances in vision and in the action of the eye muscles. It may, however, grow around the pterygoid and below the sphenoid and yet affect the foramen lacerum anterius as before. Or, it may extend backwards along the under surface of the petrous and into the foramen lacerum posterius and in this way the glosso-pharyngeal, pneumogastric and hypoglossal may be concerned in the symptoms manifested.

Besides this, we must admit that almost any part of the floor of the middle fossa may be destroyed and entrance into the cranial cavity effected.

Under surgical methods in vogue at present, there can be no hope of cure, absolute or relative. It is doubtful if the technique will ever be improved so that a carcinoma in this region can be removed with sufficient completeness to warrant any relief or stay in the progress of disease. We can only accept the glimmer of hope in the advance made in such methods as the X-ray treatment of dermal cancers, and in the steady, manly and faithful work, looking towards the discovery of the cause of cancer wherever found.

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PNEUMATIC NASAL TAMPON AND SPLINT.

BY C. A. LEENHEER, PH.G., M.D., CHICAGO.

This tampon is not entirely new. Pneumatic tampons for the control of hemorrhage are on the market, such as that of Dr. Ingals, and those of soft rubber made by instrument houses, like a finger cot, into which a catheter is inserted tied around it whereby it may be inflated.

The uses for which it was made are as follows:

1. (a) As a haemostat after operation, as for instant removal of spurs and excrescences, tumors, etc. Also after correcting deflections of the septum (Asch operation, etc.).

(b) Operations on the turbinated, such as resection of a part or whole.

(c) In chronic epistaxis due to ulcerations of anterior portion of septum.



2. (a) As a splint to keep a corrected septum in place.

(b) To use as a pressure tampon in turgescence of turbinates.

(c) Interposing between raw surfaces to prevent synechia. Also after cauterization of septum and turbinates.

It is made entirely of rubber. The center-piece "A" is made of rubber which will not collapse, length, $1\frac{3}{4}$ inches; width, $\frac{1}{4}$ inch; height, $\frac{1}{8}$ inch; slightly elliptical in shape. This tube passes through the center of the tampon proper and is the means whereby breathing space is obtained.

The outer rubber casing "B" is made of fairly stiff rubber and extends around "A" about $\frac{3}{4}$ of an inch. It has a rim of stiff rubber all along its edge, which prevents over-extension. "B" is inflated by means of hand bulb, which is best done by attaching the end of glass dropper to an atomizer bulb. Compressed air does not

work satisfactorily, because it cannot be regulated as well as a hand bulb. The end of the medicine dropper is inserted into the small rubber tube marked "C." After being inserted and inflated to proper extent rubber tube "C" is tied.

Tampon is best inserted by means of curved applying forceps. It is not necessary to use any lubricating substances, as oil or petrolatum, as it slips in very easily with the tampon between forceps and inflating tube "C" turned upward and towards you. Nares is dilated by means of speculum and the tampon inserted. When tampon is in position it is inflated and "C" tube is tightly tied by means of silk thread which has been previously tied loosely around it. All of the tampon is now entirely within the nares. It is a good plan to pack a little cotton anteriorly to the tampon, being careful not to obstruct the tube "A."

I expect to report a number of cases in a short time in which this tampon has been used and with what success.

SOME ADVANTAGES OF THIS TAMPON.

1. Can be thoroughly sterilized.
 2. Does not cause secondary hemorrhage (as gauze in removing).
 3. Pressure can be regulated.
 4. Leaves good space for breathing purposes.
 5. Easily inserted.
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SOCIETY PROCEEDINGS.
NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Stated Meeting, October 22, 1902.

EMIL MAYER, M.D., Chairman.

A Case of Salivary Fistula.

Dr. W. N. Hubbard presented a woman who at the present time had a salivary fistula. She had come under his observation about one month ago with a diagnosis of possible neoplasm. On inserting a needle nothing was withdrawn. Four days later the tongue was swollen to about twice the natural size, there was great swelling of the floor of the mouth and the body temperature was 101° F. Immediate exploration revealed a small collection of pus, the evacuation of which caused abatement of the symptoms. Wharton's duct was still patent, and on pressure with the finger a little pus could be expressed. When peroxide of hydrogen was injected through the opening in the neck it appeared in the mouth through the opening of Wharton's duct. Of course this abscess must have been in the submaxillary salivary gland. The urgency of the symptoms was evidently dependent upon the walling in of the pus by the thick membrane surrounding the gland. The woman gave a history of occasional swelling in the mouth, which was increased after eating, and was relieved by gargling. Salivary calculus, the speaker said, was the most common cause of this condition. It was not uncommon for a cystic condition of Wharton's duct to become septic and terminate in suppuration.

Dr. M. D. Lederman mentioned in connection with this case a similar one that had come to him recently in the person of a youth of nineteen, who had a swelling under the chin and behind the angle of the left lower jaw. There was a history of having suddenly expelled two years before some gritty masses from the mouth, and that at the time there was some swelling in the mouth. Examina-

tion showed a large swelling of the sublingual tissues, which forced the tongue between the teeth. There was a temperature of 101° F. in mouth. Pus oozed from the opening of Wharton's duct, and on passing a probe into the duct, a gritty substance was detected. An incision was made along the floor of the mouth and after some manipulation with a dull curette, he had removed a calculus measuring $\frac{3}{4} \times \frac{1}{4}$ inch. Both the submaxillary and the sublingual glands were involved. Pressure over the submaxillary and sublingual caused an increased flow of pus through the incision. The patient was unable to speak on account of the sublingual tumefaction. Naturally only liquid foods could be swallowed. The after-treatment consisted of tamponing the wound and frequent washing with an antiseptic. An excellent result followed.

Dr. W. Freudenthal said that he had had several similar cases, and had made one attempt though an unsuccessful one, to remove the stone through the mouth.

Dr. Thomas J. Harris said that at one time the patient had been running a high temperature, but there were symptoms at first which seemed to point to a neoplasm. It was a question whether any simple treatment applied to the duct would cause healing up of the gland. They had been unable to detect the presence of a calculus by means of the probe, yet there was reason to believe that a calculus was there.

Dr. M. H. Cryer, of Philadelphia, said that these salivary calculi are usually situated in the duct just above the mylo-hyoid muscle. He had never seen direct proof of a calculus being in the gland proper, that is, below this muscle. When there was a cheesy mass on the floor of the mouth it was advisable to open the duct and remove the contents. If the sack contained fluid alone instead of incising the part it had been his practice to insert a seton. This, of course, caused a suppuration, but it established a new permanent opening. Without further examination as to the character of the fluids emitted from the opening he would be in doubt as to the proper treatment in a case like the one just presented in which the opening was upon the neck.

A Laryngeal Tumor.

Dr. W. K. Simpson presented a young woman having a very smooth growth in the interarytenoid space, with a rather characteristic swelling of the cartilages. Taken by itself it presented the appearance of a tubercular growth, but in addition there was a

marked tertiary destructive lesion on the soft palate, so it was probable that the laryngeal growth was specific in its nature.

Dr. E. Mayer expressed the opinion that the growth was composed of granulation tissue, and that the patient should receive antisyphilitic treatment.

Syphilitic Adhesions of Throat.

Dr. Thomas J. Harris presented a young girl whom he had presented last spring to the Section as a case of syphilitic disease in the mouth. There was almost total adhesion between the soft palate and the wall of the pharynx. The patient was not suffering much from this, but from a partial stenosis of the larynx, due to a very thick band extending from the tongue backward on the left and shutting off fully half of the larynx. The case had been under observation for about five months, and there had been no great extension of the growth. No local treatment had been employed, but antisyphilitic treatment had been given a faithful trial.

Traumatisms During Adenoid Operations.

Dr. W. F. Chappell presented this paper. He said that while a simple operation in trained hands there was abundant evidence that it should not be undertaken by the inexperienced. The posterior portion of the septum was apt to be torn off by the tyro, and it was said that the Eustachian prominences were apt to be injured. The latter accident should not occur if proper attention were given to the well known methods of localization. It was important to take the body temperature of the patient before doing an adenoid operation, as in this way one was often warned of an approaching attack of some acute disease, such as measles. Minor traumatisms might easily be inflicted upon the soft palate. Complete rupture of the soft palate must, however, be extremely rare. Such a case was reported in the paper, the accident having occurred before the patient came under his observation. The boy had been first seen by him last June, ten days after the adenoid operation. There was an irregular tear in the soft palate extending from the free margin upward and to the left to the hard palate. The boy seemed very dull and some fluids regurgitated through the nose. The boy became very anemic and emaciated during the summer. By experiment on the cadaver, Dr. Chappell said he had found it impossible to rupture the soft palate with the finger, and only with great difficulty by the use of the large forceps.

Dr. W. K. Simpson said that from the character of the cicatrization he thought there must be a strong syphilitic taint in the child. It was very rare to see adhesive cicatricial conditions resulting from minor traumatisms.

Dr. Joseph Abraham said that while attending one of the large clinics at Berlin an assistant had been called upon to operate upon a boy of thirteen for adenoids. It was not customary there to use any anesthetic. The operation was done with the Gottstein curette. Just as the instrument was passed the child endeavored to escape, and this led to a rupture of the soft palate from the free border to the attachment to the hard palate. There was no syphilitic taint in this case.

Dr. H. Jarecky said he had seen a case in which an experienced operator had caught the uvula in the forceps. There was a slit made in the soft palate, which subsequently healed without any interference. He had seen another case in which the uvula had been completely torn off by a young operator.

Dr. W. C. Phillips said that one of his assistants on attempting to do an adenoid operation had employed a good deal of force and had succeeded in removing a considerable section of the vomer. According to his observation the most frequent accident was the tearing of the uvula, and this was usually caused by the use of the curette. In healthy subjects such lacerations usually healed without difficulty. He had seen one case of bad laceration of the posterior pillar produced either by the forceps or the tonsillotome. Three or four days later it was necessary to introduce three or four sutures.

Dr. Max Toeplitz said that the suggestion to take the temperature before an adenoid operation was a good one. In one of his cases the day after operation he found a temperature that was unusually high, and it was subsequently accounted for by the appearance of the eruption of measles. Dr. Chappell had spoken about holding the forceps in the middle line. If this were invariably done the adenoids could not be removed from the Rosenberg fossa. The paralysis of the soft palate was always due to injury of one of the pillars. He had seen the same thing not infrequently after tonsillotomy.

Dr. Francis J. Quinlan said that after looking at some of the new and very large instruments for adenoid operations he did not wonder that these injuries occurred. The smaller the instrument,

if effective, the better. He was in the habit of putting the patient in an upright position, and allowing the soft palate to fall and the growth to fall by gravity almost into the grasp of the instrument. There should be no more than a healthy mucous slough after the adenoid operation, and if there were bone necrosis there was apt to be inflammation of the tubes.

Dr. George B. McAuliffe said that in those cases in which the mucous membrane had been torn off by the curette the growth had already undergone fibroid change, as in persons approaching adult life. A digital examination should convince anyone that with the instruments commonly employed the danger of the operation was by no means slight. Adhesion of the Eustachian orifice to the posterior wall was a common result. The earache seemed to be satisfactorily explained not by the traumatism of the operation, but by the subsequent vomiting and the forcing of septic material into the middle ear. He had seen two such cases following an operation done by a well known operator. The taking off of the uvula was very common. The speaker then presented a modification of the Gradle forceps. The blades were flat, and on closing them they moved slightly away from the pharyngeal wall.

Dr. W. N. Hubbard remarked that he had seen muscular tissue removed from the posterior wall of the pharynx in the course of an adenoid operation.

The Pneumatic Sinuses and Cells; Their Intercommunications and Outlets.

Dr. M. H. Cryer, of Philadelphia, spoke on this subject and illustrated his remarks by lantern slides and sections of skulls. He said: The development of the sinus begins about the fourth month of gestation by an invagination of the lining membrane of the nose from the hiatus semilunaris into the body of the maxilla. As the invagination progresses, the cancellated portion of the bone undergoes resorption. This resorption of the internal portion of the maxilla is continued in a variable degree throughout life, until in old age the walls usually become exceedingly thin. In some cases the decalcification and resorption are carried to such an extent that the entire bone is thinned, and an ordinary lancet blade can be easily passed through the wall into the sinus, or the entire substance of the bone may be in resorbed in places, leaving nothing but the membranous tissue at these points.

The maxillary sinus varies in shape and size, it being impossible

to find two alike, even in the same skull. The floor of the antrum may be on a level with the floor of the nasal fossa, it may be extended far below it or even on a much higher plain. These conditions are sometimes found in the same skull.

Incomplete septa of the sinus are often found. They may partially divide the sinus antero-posteriorly or bilaterally.

In about fifty per cent of the skulls examined the following conditions have been found: The ridge of bone on the under surface of the anterior portion of the maxillary sinus which contains the infraorbital canal, often dips downward to meet the anterior wall of the sinus in such a manner that the canal becomes distinctly tubular in character passing diagonally through the sinus, with an open space above the tube. This open space extends outward into the lower rim of the orbit forming an infraorbital sinus or pocket. The tube-like canal has a thin lamina of bone extending from it to the side of the true sinus. The ostium maxillare, the outlet of the sinus, is an oval-shaped foramen and is almost constant in its situation, i. e., in the upper edge of the proximal wall near the anterior portion. It occasionally commences in the roof of the sinus. In either case it terminates in the hiatus semilunaris, the latter passage-way or canal commences at the lower end of the infundibulum of the frontal sinus and passes through or along the outer wall of the middle meatus in the form of a semi-circular groove. It extends down and backward in a curved direction, being horizontal in its posterior portion, and terminates a little back of the center of the nasal cavity. The inner boundary or unciform process of this passage-way is falciform in shape and forms a shield to the ostium maxillare of the maxillary sinus. For this reason it would be impossible to pass a sound into the maxillary sinus in a normal skull, although a sound could be passed into the maxillary sinus through a pathological or traumatic opening made where no bony projection was guarding it.

Various frontal sinuses were shown and among them a very large one. In this specimen the frontal sinus extends from the external angular process of one side to that of the other, with but a thin, though complete, septum between them. The septum was not in the median line. The sinuses pass backward over a greater portion of the orbits and upward toward the frontal eminences.

Seven large specimens of sphenoidal sinuses were shown. The outlet of the sphenoidal sinus is into the highest meatus. If there

are three meati the outlet will be into the "Superior" meatus; if there be four meati the opening will be into the "Supreme" meatus of Zuckerkandl, and if there be five meati the opening will be into the fifth meatus. The sinus and its outlets are so situated that it will not drain when the patient is either standing or lying on the back. The sphenoidal sinus is most difficult to reach surgically.

Several vertical transverse sections of skulls and photographed illustrations were shown, with cross-sections of the orbits, nasal septa, and maxillary sinuses, etc. He said that about sixty-five per cent of the skulls that he had examined had straight septa, and that one reason the rhinologists sometimes consider that a large proportion of the people have crooked or deflected septa, is because those having the straight septum seldom have occasion to visit the rhinologist.

An excellent section of the skull and brain in situ was shown. The method of preparation was interesting. The subject was injected with a solution of formalin for hardening the soft tissue, and plaster of Paris for filling the arteries. Then the subject was covered with vaseline, wrapped in bandages and frozen by exposure to a temperature of 15° F. In order to make smooth and accurate sections he found it useful to employ a saw from which the usual teeth had been removed, and so-called "chisel teeth" made upon it. The varying direction of the lachrymal duct was shown by a series of photographs. In mouth-breathing children it was almost impossible to secure a regular and proper development of the alveolar arches containing the teeth, so long as the nasopharynx is left filled with adenoids. A personal experience was referred to in which, after working hard for a year trying to regulate the teeth of a child of eight years without making hardly any progress, a rhinologist had been called in to remove the adenoids. After this operation it was comparatively simple to accomplish what had been practically impossible before. Slides were presented to show how the tongue tended to spread the arch of the mouth in a normal skull. Many specimens of elongated and compressed skulls were also exhibited.

Dr. M. D. Lederman asked what importance Dr. Cryer placed upon the muscles of the cheek in pushing the alveolar arch forward, such as seen in instances of mouth-breathers, with decided narrowing of the alveolar arch, and high dome effect.

Dr. Cryer replied that one of the great reasons for the contrac-

tion of the parts was the lack of the constant percussive force of occlusion exerted by the mandible upon the maxillary arch.

Dr. W. K. Simpson asked regarding the effect of nursing of infants, and of thumb-sucking as factors in the formation of the high arch.

Dr. Cryer said that the palato-glossal muscle was an accessory muscle to that of the lips, and was supplied by the same motor nerve, the seventh. The chicken, in drinking, puts its beak in the water and throws the head up in order to swallow, because it has no palato-glossal muscle. Sucking, whether from the bottle or from the breast, must exert the influence suggested.

Dr. Thomas J. Harris asked if it were impossible anatomically to catheterize the antrum. What was the explanation of the successful practice that had been based on this assumption? He would also like to know with regard to the author's preference for entering the sphenoidal sinus through the antrum sinus instead of the nose.

Dr. Cryer said that if the antrum were diseased he thought the mere washing of the sinus could accomplish but little. As to the other question, it was his familiarity with the mouth that made him prefer the antral route.

Dr. H. H. Curtis asked if he meant that he went through the antrum and into the sphenoidal sinus without entering the nose. He would also like to know about his treatment of the antrum.

Dr. Cryer replied that that was his position, and he was not so much afraid of the carotid as he was of the internal maxillary artery. He would treat the antrum through the mouth. He would make an opening large enough to insert his finger, and leave this open without even a tube in it. If the diseased condition were removed the large opening would close without much difficulty and healing should take place in a week or two; otherwise it might take many months.

Dr. H. Beaman Douglas said he did not quite understand what was to be accomplished by opening the sphenoid from the antrum. He would like to ask if he would dare to make exploratory puncture from the antrum into the sphenoidal cavity in cases of suspected empyema of the sphenoid. His own experience had been that the sphenoidal sinus was sometimes very small, but was always in close relation with the posterior ethmoidal cells. He would prefer making the opening through these cells.

Dr. Cryer replied that he would want direct evidence of trouble in the sphenoidal, as there were numerous large anastomosing veins in the speno-maxillary space.

LARYNGOLOGICAL SOCIETY OF LONDON.

Seventy-Fifth Ordinary Meeting, June 6, 1902.

(Proceedings continued from page 880.)

The Diagnosis and Treatment of Malignant Stricture of the Oesophagus. (General discussion.)

Sir Felix Semon:—I am sorry I was prevented from being present at the beginning of Mr. Symond's admirable paper, and, therefore, do not know whether he referred to two points, the absence of which rather struck me. In speaking of the differential diagnosis between malignant and other forms of oesophageal obstruction, I heard him say nothing about laryngeal paralysis, nor about the question of the enlargement of the cervical lymphatics. Both these points I have often found to be of considerable importance with regard to the diagnosis of doubtful cases. Dr. Tilley has just quoted a case in which the discovery of a laryngeal paralysis gave the first reliable sign of existence of organic obstruction. I may say that I have seen quite a number of similar cases, and more than once have I found that patients who came to me for laryngeal symptoms, apparently limited to that organ, such as hoarseness and loss of voice, later on developed the ordinary symptoms of malignant disease of the gullet.

In connection with this point, I should like to say that oedema of the neighboring arytenoid cartilages, if the disease is situated in the cricoid region, is by no means the only laryngeal symptom of oesophageal cancer in that situation. When malignant disease affects the posterior aspect of the cricoid cartilage, it eats its way by no means rarely into the substance of the posterior crico-arytenoid muscles, and causes a true myopathic paralysis of one or both of these muscles. The symptoms resulting from this when the disease affects both sides are stenosis of the glottis and great respiratory difficulty, often enough of greater urgency than the difficulty of swallowing.

I need hardly mention that laryngeal paralysis is by no means limited to cases of cancer of the oesophagus when the latter is sit-

uated in the cricoid region, but that it may also accompany instances of that disease occurring much further down, that is, one or both recurrent laryngeal nerves are caught in the furrow between the trachea and the oesophagus by a new growth starting from the latter.

With regard to the enlargement of the cervical lymphatic glands, this sign has several times been of considerable value to me, particularly enlargement of those glands which one can feel on pressing hard immediately behind the clavicle when standing behind the patient, but one has to press sometimes very low down to feel these glands enlarged.

With regard to the treatment, I speak with considerable diffidence, for I think we may say we all sit at the feet of Mr. Symonds, who has shown not only this country, but the whole world, how to treat a number of these cases, particularly by the employment of the smaller tubes which he has introduced. In Germany the credit of this is often given to Professor Renvers, although the last-named gentleman himself, when first introducing the method into Germany, acknowledged his indebtedness to Mr. Symonds. Personally I must confess I have not much opportunity of trying the short-tube treatment, and I have been rather unfortunate in those few cases in which I have tried it, for my patients were quite intolerant of the tubes for any length of time, and I had, therefore, to remove them, but in several cases which, later on, I sent to Mr. Symonds considerable relief was given, in two of them for a long time, by the employment of this method.

Should gastrostomy be required, I entirely agree with Mr. Symonds that the operation should not be performed at too late a stage of the disease.

Concerning the introduction of bougies, I have learned from experience the wisdom of his advice to give in difficult cases the patients a night's rest and a dose of opium previous to the introduction of the tubes. One may succeed by following this simple advice where one has previously failed. Should an anesthetic be indispensable, the dangers of chloroform in such cases should not be under-rated. I have had a very sad experience of this. About a year ago a lady consulted me on account of difficulty in swallowing. She was thirty-four, and in otherwise excellent state of health, but had lost flesh in consequence of this difficulty. There were no signs of organic disease anywhere in the chest or in the throat, but when I proceeded to introduce a bougie, I did not succeed.

The same difficulty was encountered by Mr. Makins, whom the patient had also been advised to consult. He and I agreed that it was desirable to repeat the examination under chloroform. A few days later this was done; the anesthetic being administered by one of our most experienced and skillful anesthetists. When the patient was deeply under the influence of the drug—as in a case of this sort ought to be the case, to exclude all reflex action—I endeavored to introduce a big bougie, but without success, nor did Mr. Makins have any better fortune. I then tried a smaller one and still failed, and Mr. Makins' attempt met with the same result. The bougie having been withdrawn, the patient showed signs of coming to. The chloroformist said, "Let me give her a whiff more," and proceeded to do so, when the patient died suddenly. Every effort was made to resuscitate her but all was fruitless. No post-mortem examination took place, and to this day I do not really know what was the nature of the disease, but both Mr. Makins and myself concurred in the belief that it was organic.

Apropos of the distinction between organic and functional stricture of the oesophagus, I remember having seen two or three quite distinct cases in which, after some initial difficulty, the bougie could be passed quite easily, and in which, after this had been repeated two or three times, the stricture was found to have disappeared. I cannot say that these were not examples of "hysterical" stricture, but then, what is hysterical stricture? Is it not what one would usually call spasmodic? I do not think the existence of such a form of oesophageal stricture can be denied.

In conclusion, I wish to congratulate the Society upon having had so excellent an exposé of an important and difficult question as that to which we have just been listening.

Dr. Clifford Beale:—I should like to make one small contribution to this debate, and it is in reference to the question of diagnosis by the means of the x-rays. The opportunities have not occurred very frequently since more powerful apparatus was introduced, but a good many cases have been examined, and my friend, Dr. Hugh Walsham, handed to me this afternoon four plates which he has made of such cases, two of them being confirmed by a post-mortem examination, and these two show certain definite characteristics which may ultimately turn out to be trustworthy in diagnosis, but, of course, with the evidence so slight as it is at present, one can only take things as one finds them. But the important point is this, that in these cases of oesophageal cancer there is a

very well-defined shadow thrown on both sides of the normal mediastinal shadow, whereas in the case of enlarged glands at the root of the lungs, the shadow, although something similar in form, is undefined at its edges. As one would expect, a well-defined morbid growth will give a sharp shadow, and a mass of glands with inflammatory thickening round about them will be represented by indefiniteness. (The plates were then shown). One point with regard to this method of examination by the Röntgen rays is that it gives us more information as to the amount of thickening and growth that may be present. I think we shall all bear out Mr. Symonds when he says that it is the bougie which masks the diagnosis after all; but the bougie only tells us that there is an obstruction and not how extensive the cause of obstruction may be.

As regards the treatment, one cannot help being struck with the fact that cases are recorded (and Mr. Symonds has mentioned one) where, after gastrostomy has been performed, and where, presumably, the patient has been kept quiet for a few days and fed per rectum, it is found that the power of swallowing is perfectly restored. In the cases in question that I have heard of, for I have not yet come across one myself, the power of swallowing is apparently as good as ever. Now, when one comes to think of what it is that gastrostomy does for the patient, one finds that it is nothing more than freeing the growth from irritation, and giving it absolute rest. Therefore, this leads one to think that in the early stages of such a condition one might do a good deal in the same way by keeping the oesophagus as free as possible from irritation, and by giving it rest. I have carried out this idea in the case of a patient who is under treatment now. By getting him to swallow a certain amount of hot water after every meal to wash down the oesophagus, and at the same time giving a small amount of sticky mixture of opium, i. e. *Liquor morphiae* combined with glycerine and gum acacia, the result is altogether satisfactory, affording, as far as one is able to judge, both cleanliness and rest. I can also quite confirm what Mr. Symonds says as to the absence of dysphagia in cases where there is pressure from intrathoracic growth and aneurysm. I think the absence of dysphagia may sometimes be a rather striking feature in certain cases of cancer of the oesophagus where the stricture is not complete. As an old Guy's man, I rather expected Mr. Symonds to tell the story that was in vogue there in our student days, of Astley Cooper, who after going through the medical wards at Guy's to see some special cases, had

his attention called to an old man, sitting up in bed, whose face, so far as appearances went, was obviously suggestive of cancer. Astley Cooper was told that none of the physicians could find out what was the matter with the old man, and he instantly replied, "Then he must have cancer of the oesophagus; he obviously has cancer, and this form of it is the only one which may give no symptoms."

Cases crop up like this every now and then, which are proved by post-mortem examination to have extensive malignant ulceration of the oesophagus, and yet during life, though these patients obviously have cancer somewhere, there is no regurgitation, no difficulty in swallowing, and nothing to call attention to it. I do not know how frequently such cases may be, but still one must always bear in mind the possibility of their occurrence.

Mr. H. B. Robinson:—I should like to emphasize a point which was made by Sir Felix Semon, and that is the great importance of the enlargement of the cervical glands in the diagnosis of malignant stricture of the oesophagus. Its importance struck me forcibly in a case I saw a little time ago. The patient was a man I saw in private practice, who had a mass of enlarged glands just above the right clavicle; he had great pain down the arm, but there was no suspicion whatever of his having any oesophageal disease at all, but when one went into the question and made a few inquiries and passed a bougie, there was undoubted contraction of the oesophagus. His oesophageal symptoms had been of so slight a character that the enlargement of the glands had never been thought to be in any way connected with a growth in the oesophagus.

Another interesting case of oesophageal obstruction which is worth bearing in mind perhaps, although the obstruction was not in the oesophagus itself, but was caused by pressure outside it, was that of a man sent to me with very marked dysphagia. He was about forty-five. The only thing one could see that probably had relation to the dysphagia was the fact that there was some enlargement of the left lobe of the thyroid gland, but still, from what one was able to feel, one did not at the time think it could exert any great pressure on the oesophagus, though it was the only apparent cause of the difficulty in swallowing. Thinking there might be something deeply placed exerting pressure, I operated and found in the deep part of that gland a cystic adenoma, which was pressing right down between the trachea and the oesophagus

and indenting the anterior wall of the oesophagus. I removed it by shelling it out, and the man did perfectly well and has had no further symptoms of dysphagia from that day to this.

Dr. J. Donelan:—I should like to ask Mr. Symonds whether he regards as absolute strictures those in the neighborhood of the stomach, in the lower part of the oesophagus, where it is impossible to pass a tube and keep it in position for any length of time. I remember the very first case I ever saw of this kind as a qualified man was a case which illustrates the point brought forward by Sir Felix Semon, namely, the early occurrence of laryngeal paralysis. It was a case under the care of a distinguished specialist here, in London, and laryngeal paralysis had existed for six months. After a time I saw the patient, who said that for four days previously he suddenly lost the power of swallowing and had had no food since. I remember I tried to pass several kinds of bougies, but without success, and the only thing I was able to pass was the third string of a violoncello, which is very small, much smaller than any sound. This served afterwards as a guide for the passage of a straight feeding tube. I kept this in position for some days; the obstruction was sixteen inches from the teeth. The tube I used for this man was a thin one—I don't know now whose name was attached to it—but it was a French tube and very fine; it was much the shape of a Symond's tube, but much thinner. During the six months that the patient lived afterwards it was retained in position. It was taken out on one occasion and there was very great difficulty in putting it back, but ultimately it was replaced and remained in position until the death of the patient. The second introduction was facilitated by the use of cocaine; by passing the tube down as far as possible and then pouring a little cocaine solution through it.

I should like to ask Mr. Symonds whether the similar use of a solution of adrenalin might not be of some use in reducing the turgescence and facilitating the passage of a bougie or tube.

We have lately had some three or four cases examined by means of the Röntgen rays, but in these the lower part of the oesophagus was the seat of disease, and whether in that situation it will be possible to arrive at any more definite conclusion than that already afforded by the passage of a bougie must be a doubtful matter on account of the greater size and number of the intra-thoracic structures that are present. It does not appear to me that the Röntgen

rays in this situation can throw more light on the subject than the bougie.

Dr. Dundas Grant:—I should like to add my tribute of indebtedness to Mr. Symonds for the way in which he has marshalled so many points. I have selected from my memory some of the difficulties which I have experienced.

The following occurred very early in my experience of general practice. The patient was a man of middle age who had increasing difficulty in swallowing. This difficulty varied a little in its intensity. The man was certainly getting thinner. I had then a consultation with the late Sir Andrew Clarke, who asked me to pass an oesophageal bougie, which I did without any very great difficulty; but he discovered the presence of malignant disease in the abdomen.

In another similar case which I have had more recently under observation, the patient had all the appearances of cancer of the oesophagus. I was unable to pass a bougie through it. Without examining the patient very much further I handed him over to a general surgeon, who was anxious to perform gastrostomy. On examining him with a view to that operation he found carcinoma of the liver. In these two cases the contraction of the oesophagus seems to have been reflex in origin; perhaps my experience with regard to these cases has been very exceptional, but I put it forward, and I shall be glad to know whether this is a frequent condition simulating carcinoma of the oesophagus. Again, whether in this second case of mine the administration of chloroform would have helped to clear up the difficulty is an important question, because if it would, I think it is a great argument in favor of administering an anesthetic in these cases. There was under my care some time ago a patient on whom I failed entirely to pass an oesophageal tube. He was fortunate enough to come into the hands of Mr. Symonds, and I understand that it was under an anesthetic that he succeeded in introducing the tube, which gave the patient very great comfort for some time. Naturally the objection to chloroform is the risk incurred by its use, and this is a serious factor which has to be reckoned with. I should suppose it was a coincidence in this particular case of Sir Felix Semons, which had such an unfortunate termination. But whether some involvement of the cardiac nerves makes chloroform more dangerous in cases of oesophageal cancer is a point on which I think there is room for reflection.

In another case I was able to pass a large bougie with perfect facility, and ventured to give the opinion that there was no disease of the oesophagus, but the patient died a few months later, and was reported to me to have been certified as dying from carcinoma of the oesophagus. In another case, which I showed to this Society as one of primary malignant disease of the thyroid gland, and there was a general consensus of opinion that it was such. The patient died afterwards at Reading Hospital, and on post-mortem examination was found to have extensive disease of the oesophagus certified as carcinoma of the oesophagus, though, indeed, this may have been secondary to the disease of the thyroid gland.

With regard to those cases of spasmodic stricture of the oesophagus I have seen several cases where a considerable amount of dysphagia has arisen from defective dentition, and I remember well the case of an old gentleman (a medical man) who came to me on account of what he thought to be carcinoma of the oesophagus. On examination, I found that he had lost almost all his teeth, and I recommended him to get some artificial substitutes. Within a few weeks' time after obtaining them there was complete recovery of the power of swallowing.

With regard to the Röntgen rays, I saw a case some little time ago in which a radiograph was taken; the question for decision was whether there was by any chance aneurysm, but there was no pulsation as reported by Dr. Mackenzie Davidson, who made the radiogram. A few weeks afterwards the patient died from a sudden enormous hemorrhage, and at once the question arose whether this was not after all a mistaken diagnosis, death resulting from rupture of an aneurysm. I do not think it a very rare thing for oesophageal cancer to end fatally from hemorrhage, but I should be glad to know what is the experience of members with regard to that.

There is one little therapeutic point which I have never had an opportunity of carrying out, but in case it should have its value, I venture to reproduce it for consideration. It was invented by the late Michael, of Hamburg, and is a kind of Hahn's tampon tracheotomy tube, in which the sponge is covered with very thin india-rubber, and some glycerine is introduced between the rubber and the sponge, so that it may dilate and be kept for a long time in the trachea without its getting sodden and soaked with decomposing foods. He states in a paper of his that for a year a patient with a fistula between the upper part of the trachea and the oesophagus

was kept alive after the introduction of this tube into the trachea. It remains to be questioned whether in a case of a fairly obvious fistula of this kind it is not a good treatment to do a tracheotomy, and introduce some such dilating tampon canula.

Mr. President and Gentlemen, I have purposely selected my most unsatisfactory results, and I should be glad to hear how I may avoid them for the future.

The President :—Gentlemen, I am sure we are all very much indebted to Mr. Symonds for the able way in which he has brought before us our subject of discussion. His experience of the treatment of these cases of malignant stricture of the oesophagus is, of course, much larger than ours has been. There are one or two points, however, to which I would like to refer. He has mentioned "oesophagoscopy." I do not know, and I should doubt, whether it is of any particular value from the diagnostic point of view, but there is no difficulty in introducing a straight metal tube fitted with a rubber point down to the obstruction. Before using the tube I am in the habit of letting the patient sip some solution of cocaine. Cocaine thus applied also facilitates the introduction of bougies.

In regard to the Röntgen rays, I had a case a short time ago under my care in which a skiagraph was taken, but, unfortunately, the rays did not give any very definite information. The case was confirmed post-mortem as one of malignant oesophageal stricture.

The dangers of anesthetics in these cases have been mentioned by Sir Felix Semon and Dr. Dundas Grant, I cannot help thinking that there is some peculiar danger in this class of cases from anesthesia. I remember a case a good many years ago where I was giving chloroform for gastrostomy and the patient very nearly died. Fortunately, we were able to bring him round, but the operation had to be stopped. I think possibly there may be some special liability to danger in these cases, or the danger may be due to the weak and exhausted state of the patient at the time of operation.

I should like to ask Mr. Symonds if he has any experience of radical treatment in cases of disease of the upper portion of the oesophagus? What are the results of oesophagectomy? Mr. Symonds, in bringing to our notice the subject of cancer of the upper part of the oesophagus, has included the same disease of the lower portion of the pharynx. There was a case under my care recently, a woman æt. 52, who came to the Brighton Throat and

Ear Hospital. On depressing the tongue, the top of a growth the size of a walnut could be seen at the lower back part of the pharynx. On examination with the finger, the growth appeared to be pedunculated. Thinking it a suitable case for external excision, I passed her on to Mr. Buck, at the Sussex County Hospital. Under chloroform, laryngotomy was performed and the growth was ligated round the pedicle and came off easily. It was found to be a squamous-celled epithelioma. Subsequently an external operation was performed on the left side, the pharynx exposed, and the growth excised with scissors, all the disease apparently being removed. The growth was found to extend just to the left aryteno-epiglottidean fold. The patient did perfectly well, and except for a slight attack of bronchitis after the operation there was no complications. The wound healed admirably, but since her discharge from hospital, she developed on the right side of the epiglottis a further deposit of epithelioma which did not spread from the original growth but started as an entirely fresh nodule. The patient declined further operation.

I have not had a large experience of the use of tubes, but I feel more inclined to employ them since hearing Mr. Symonds' very elaborate description of the method of employment. I should have been glad to have heard from him a few more particulars about the risks of gastrostomy. Patients always ask what are the risks involved in this operation.

Mr. C. J. Symonds, in his reply, said:—I am much obliged for the kind attention the Society has accorded my paper. I have to thank Dr. Tilley and Sir Felix Semon for raising the question of laryngeal paralysis and its value as an early diagnostic sign of oesophageal stricture. On collating my experience for this paper, I found in most of my cases I was able to settle the question of diagnosis in other ways, but I have seen cases, though not similar to those related by Sir Felix Semon, where laryngeal paralysis has helped in diagnosis, and has been the symptom from which the patient has sought relief. I am much interested in the cases referred to by members, and by Mr. Robinson's especially, though certainly I have not come across a case similar to his. Of course I may have missed them, but I do not, speaking off-hand, recall any case where the enlargement of cervical glands has led me to diagnose malignant stricture of the oesophagus, and I am glad to learn of this case.

The only point of opposition I have had relates to the "spasmodic" type of case. And here let me explain that as I was opening a discussion, I purposely spoke somewhat positively, as I thought it would increase the interest of the debate. The only case I have had which resembled Sir Felix Semon's was that of a

woman who had had obstruction for some hours when I saw her, and it was only on several similar occasions that she experienced it, and in her there was a distinct spasm of the sphincter at the lower end of the oesophagus. I wanted to ask Sir Felix Semon at what part of the oesophagus he found his cause of obstruction. (Sir Felix Semon: "Middle.") That I certainly have never found.

With regard to the x-rays I have no experience whatever to offer, and I was glad to hear Dr. Beale's answer to my suggestion, which confirms me in my experience that intra-thoracic diseases do not give rise to this trouble.

I would suggest to Dr. Grant, who has asked for any means of assistance which would help him to clear up the difficulties which he has formerly experienced, that he should use the steel bulb. I most certainly would have missed more than one case of malignant disease of the oesophagus if I had not used it. This form (the elastic stem form with vulcanite bulb at each end was exhibited) I introduced some years ago for my own convenience more than anything else, and for use in the out-patient room. It answers, I find, very well indeed in diagnosing those soft strictures which will certainly hardly give any signs of their presence to the ordinary conical bougie.

I was glad to hear Dr. Donelan refer to cases of stricture at the lower end of the oesophagus. The position I hold in regard to these cases I put very strongly, because I have been so disappointed with the treatment usually adopted. A long tube such as he described will answer the necessary purpose. Solis Cohn sent me an interesting paper giving a successful case of treatment by short tubes in a stricture at the lower end of the oesophagus, but it is unsatisfactory so far as my experience goes; and so I advise such patients to have gastrostomy done early.

With regard to the President's case of epithelioma, that was not quite what I was referring to. I referred to cases where your only view of the epithelioma is as it creeps up below the arytenoids directly in the middle line. It is so characteristic, being quite different from cases of pharyngeal carcinoma, which begin on one side and creep round in the epiglottic folds. I doubt whether it is worth while excising these growths; they are very unsatisfactory, as they always recur. I think the patient has a better chance if he is left alone. Although I have done these very big operations, one's experience tends to make one put them on one side.

The Coudé tubes are passed in the ordinary way; they are most valuable for stricture at the lower end.

As to the question of the danger of gastrostomy which I am asked to answer, I am not prepared to do so at the present time. If performed at an early stage, it should involve very little risk indeed. I have been trying a plan lately, but whether or not it is going to prove sufficiently valuable, I do not know yet. My object is to make a better sphincter out of the rectus.

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Influenza, Pharyngitis and Laryngitis.—DR. TREITEL (Berlin).
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While the affections of the pharynx and larynx are much less frequent than those of the nose and bronchial tubes, still quite a number of authors have reported cases of a special form of pharyngitis and laryngitis. A peculiar condition of the tongue was thought by some to be almost pathognomonic. The peculiar feature of this condition was that the tongue became opalescent. This opalescence sometimes extended over the whole tongue, while at other times it was present only in the middle or at the base, while the tip would be covered with rounded or oval spots.

A number of authors reported dirty, grayish-white deposits on the tonsils, the soft palate, the pillars and the pharyngeal wall. In all these cases the influenza bacillus was found in the deposits.

The affection of the larynx assumed the form of a macular deposit on all the laryngeal tissues, most frequently on the false cords and least frequently on the true vocal cords. Small, grayish, slightly elevated spots the size of a pin-head were seen scattered over the laryngeal surface. After a time in certain cases these spots seemed to coalesce. The deposit then had the appearance of thick, sticky mucus. In the cases subjected to bacteriological examination the influenza bacillus was found. VITUM.

Rheumatism of the Nose.—W. FREUDENTHAL, M.D.—*Annals Otol., Rhinol. et Laryngol.*, May, 1902.

A reiteration of views expressed eight years ago, that the nasal articulations may be attacked by the rheumatic process. His contention hinges on the hypothesis, if we believe in a rheumatic origin of affections of the pharynx and larynx, we may as reasonably accept this etiology as explanatory of certain manifestations of nasal disease. Cases are cited of well marked rheumatic affection elsewhere accompanied by nasal pain, tenderness and obstruction, increasing or decreasing according to the exacerbation, or subsidence of the accompanying rheumatic process elsewhere. The author does not believe that rheumatism is due to any specific locus.

F. C. E.

A Note on Osteophytes in the Nasal Chamber.—A. W. MACCOY M.D. (Philadelphia).—*The Am. Jour. of the Medical Sciences* Feb. 1902.

The experience of the author leads him to conclude that:

1. With an anesthetic with the little finger or a probe, certain osseous structures foreign to normal nasal condition may be found.
2. That these osseous masses are osteophytes having the anatomical structure of such bodies.
3. That osteophytes, clinically, are new conditions to be considered and studied.
4. That in the operations for deflection of the nasal septum, lack of complete success may result from their presence.
5. That osteophytes are loose in structure and readily removed with the proper instruments.

F. C. E.

Rhinitis Vasomotoria.—OTTO SCHWIDOP.—*Surgical Clinic*, May, '02.

Starting with the belief that the causes of rhinitis vasomotoria are always to be attributed to irritants acting from without upon the nasal mucous membrane, and the olfactory nerves, he strongly recommends the employment of protargol in 2 to 5 per cent solutions in water, to be applied to the entire mucous surface by means of cotton carrying probes, massaging the parts thoroughly every day and later twice or thrice weekly.

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Laryngoscope

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